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ARCHITECTURE FOR THE SUSTAINABILITY DESIGN MASTER PROGRAM



Masters Degree Thesis

## **THE INTERACTIVE LEARNING CITY: REFORMING EDUCATIONAL NARRATIVE & LEARNING ENVIRONMENTS LEARNIENVIRONMENTS**

TUTORS

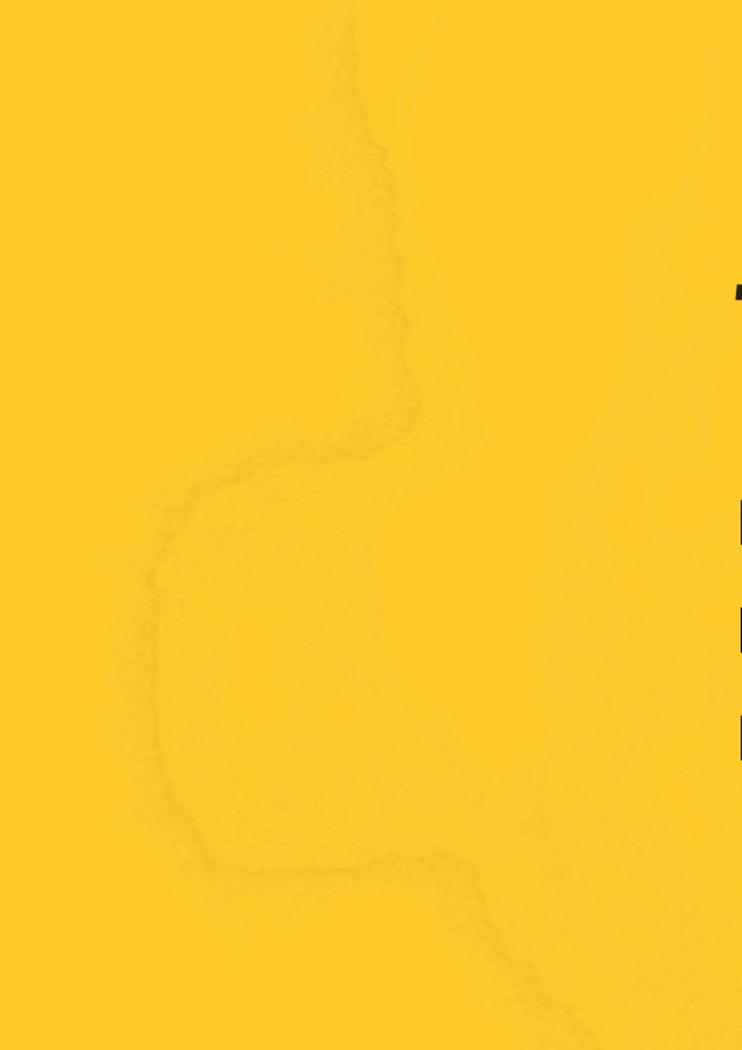
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**T**HE INTERACTIVE  
LEARNING CITY:  
Reforming Educational  
Narrative & Learning  
Environments

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**JUST A  
THOUGHT ...**

**ARE THE  
CURRENT  
LEARNING  
ENVIRONMENTS  
ADEQUATE FOR  
A LEARNER HOLISTIC  
GROWTH? ...**

**DO WE NEED A REFORM? ...**

**IF YES,**

**WHAT WOULD OUR  
LEARNING EXPERIENCE  
AND ENVIRONMENTS  
LOOK LIKE? ...**

**HOW CAN  
WE ACHIEVE THIS  
REFORM? ...**

## ABSTRACT

The future of education and learning is facing a number of considerable challenges, as the world rapidly changes and becomes more interconnected and technology-driven. In order to guarantee the readiness of future generations to face these challenges, education plays a fundamental role in equipping them with the necessary skills, abilities, and knowledge. Educational models and environments need to be interactive, flexible, and inclusive, and they should be embedded within the very infrastructure of our cities.

This paper is a call for action towards the transformation of our urban landscapes into educational environments. It aims to identify the know-how of transforming our cities into Interactive Learning Cities (ILCs). It argues that the core essence of creating a successful learning environment is interaction and that movement-based learning environments are essential for promoting engagement and learning. In these learning cities, learning is embedded in all aspects of city life, and citizens of all ages can have a wide range of multifaceted interactions among themselves, the surrounding environments, and many other possibilities that help them constantly grow and develop. Students have the opportunity to learn endlessly and on the move from a variety of sources, as they can be exposed to diverse conditions and environments.

The first chapter starts by discussing the several challenges and issues facing education in the 21st century. The second chapter emphasizes that interaction is the core essence of effective learning while concluding the first preliminary definition of an ILC. The third chapter showcases real-world examples of interactive educational policies, strategies, programs, platforms, elements, and spaces, for which the total outcome obtained will help understand the know-how of transforming our cities into ILCs, while providing a city-wide learning ecosystem, and a holistic approach towards shaping and implementing a successful and interactive learning atmosphere from the early beginning of a child's life journey.

Finally, its last chapter starts by illustrating the main inspirational model for an ILC and highlights how ILCs will help dissolve the issue of missing out children as a priority in the development process of planning and designing our cities. By using this built-up narrative across the paper's chapters and sections, it concludes how an ILC will exactly look like, and demonstrates the different components of an ILC, while highlighting its essence, flow, main user, and operational process. Through this constructed framework, it highlights that transforming our cities into ILCs is an essential endeavor. Such cities can provide flexible and inclusive environments where everyone, especially the child, can continuously grow and develop while having equal opportunities, fair conditions, and a sense of belonging to their own hometowns. They act as learning platforms that can help equip future generations with the skills and knowledge they need to face global challenges while working collaboratively and forming vibrant communities.

## KEYWORDS

Interaction - Flexibility - Lifelong learning - Inclusive learning - Interactive learning - Educational landscapes - Learning and Technology - Learning City - Education and space - Children education - Personalized Learning.

## PREFACE

Imagine any situation, complexity, or problem you have faced in your life and you had the feeling that you lack the needed skills or even the basic ones to analytically observe, critically think, and creatively solve, so you can overcome, move past, and step ahead of these issues. Please, don't stop this imagination journey and self-relating; I need you to continue drawing scenarios and pictures, but maybe this time, do it on a larger scale. What if your, my, and everyone's childhood was embraced within a healthy, interactive, inclusive, and flexible environment that provides suitable conditions for development, growth, collaboration, learning, and communication? What if these environments were available at your doorstep to offer you the required instruments so that you can equip yourself with these skills and expertise, and be prepared for all future challenges from the very beginning of your life journey? As a result of this urgent need for creating such environments, this paper is trying to take us through an exploration journey, where it identifies the different problematic aspects of our current educational systems and learning environments, the characteristics of successful and inclusive ones, and the approach to take for implementing them all over our cities.

The human race and the world are facing a considerable amount of challenges in all life aspects, which results from the revolutionary advancement of technology and the increasing pace of globalization. The future is unpredictable and full of uncertainties, but in order to overcome all of its obstacles while maintaining a healthier environment and ensuring human well-being, we need to be prepared and equipped with the necessary skills. Education has the main role in providing future generations with this variety of exposure and knowledge diversity. It gives them the needed opportunities to get ready and stand up to what the universe is hiding for them.

But the question is if today's educational forms are offering what the future needs, we need to determine how much we need to improve, highlight what is missing in the way the whole system works, and define the approaches to be adopted for a better learning experience. We always wonder how the school of the future will look like, and if we will still need schools to be our main source of education or even we ask ourselves if there will be schools.

Undoubtedly, today's educational platforms need to be developed and more diffused, while providing ease of access and availability to everyone wherever and whenever. Learning must be provided according to its main essence, it needs to be limitless and timeless, interactive and explorative, it needs to depend more on experimentation and the concept of learning by doing, as well as not being restricted to a certain location nor to a specific curriculum or subjects.

When it comes to the creation of learning environments, we must take into consideration its main keywords and core essence – interaction, flexibility, and movement –, it's a series of connections and possibilities that make the experience more engaging, enriching, and

personalized. Although flexibility is a main keyword, we limit ourselves to certain boundaries and specific locations for learning to take place, we hold back opportunities and ruin ambitions and imaginations.

In light of the current calls for development and change, many organizations (i.e.; OECD & UNESCO), associations, global agendas, and educational protagonists are working on this matter and have reached a lot of progress. They are already working on defining and highlighting the key issues, introducing solutions, and providing some guidelines and frameworks for the future of education.

Most of these entities agreed that the educational systems and learning environments as a whole need to be more open, interactive, and inclusive. Schools need to be open to the public and integrate the community into its activities, it's demanding the availability of schools' facilities and venues to be active 24/7 rather than specific hours of 5 - 6 days per week. They should unlock their doors to serve the community instead of duplicating its facilities in other areas of the neighborhood and the city, for the reason that their use is only restricted to the school and students. However, the real question here is if this is enough to develop how schools are performing and how education is perceived.

The aim of this paper is to identify the know-how of transforming our cities into Interactive Learning Cities (ILCs). It is trying to demonstrate transformation strategies and methods for the different space typologies in our environments to reshape them into interactive, inclusive, and healthier learning ones. It proposes different solutions and possibilities for having an educational city where learning is at the heart of its planning and development. A city that prioritizes and integrates education in its urban and architectural spaces, as well as into all aspects of city life.

The first chapter of this paper starts by illustrating the main problems of educational models, processes, and environments that children face at an early age. It is trying to prove that due to the lack or insufficient presence of interaction in learning environments, educational processes, and systems, results in a negative impact on children's mental health, physical well-being, and self-development. In other words their awareness, intellectual and physical capabilities, as well as their imagination, creativity, skills, knowledge, and their whole future, all of these aspects will break down, which inevitably leads to the incompetence of communities, cultures, and environments.

Then it moves to explaining how children really learn and develop and identifies the key factors affecting this process. It goes on to elaborate on the different characteristics of a learning environment, the main types of learning spaces, and the fundamental elements to be included while creating them. The second chapter explores the various forms of interaction and tries to prove that it is the core essence of the learning process and the foundation of an

effective learning environment. It shows that interaction is a focal point that links all future educational concepts (i.e.; Lifelong learning and learning city) and complies with the educational guidelines and frameworks of organizations such as OECD and UNESCO. As the notion of “Interactive Learning Cities” (ILCs) is not yet defined in any scientific reference, the paper ends the second chapter by concluding the first preliminary definition of an ILC in relevance to the narrative carried out in its previous sections.

The third chapter of the paper draws a roadmap towards the transformation and development of the different types and scales of our urban landscapes into educational environments, where learning is embedded within its very fabric and infrastructure. It achieves that by showcasing real-world applications for interactive educational policies, strategies, programs, platforms, elements, and spaces, for which the total outcome will help understand the know-how of transforming our cities into ILCs, which can provide a city-wide learning ecosystem, and a holistic approach towards shaping and implementing a successful and interactive learning atmosphere from the early beginning of a child’s life journey.

The final chapter starts with illustrating the main inspirational model for an ILC and highlights how ILCs will help dissolve the issue of missing out on children as a priority in the development process of planning and designing our cities. By using this built-up narrative across the paper’s chapters and sections, it concludes how an ILC will exactly look like, and demonstrates the different components of an ILC, while highlighting its essence, flow, main user, and operational process. Through this constructed framework, it highlights that transforming our cities into ILCs is an essential endeavor. Such cities can provide flexible and inclusive environments where everyone, especially the child, can continuously grow and develop while having equal opportunities, fair conditions, and a sense of belonging to their own hometowns. They act as learning platforms that can help equip future generations with the skills and knowledge they need to face global challenges while working collaboratively and forming vibrant communities.

Finally, it proves that by the means of this methodology, and with the integration of interaction in all aspects, contexts, and environments, we can develop and improve our learning and educational platforms and transform it from a utopia into reality; a reality where everything is interacting with what’s around it, an environment where everyone is gaining endlessly and developing constantly. A scenery that complies with the essence of the learning concept, and will maintain an interactive and inclusive learning experience within an open and dynamic educational environment. These learning settings will utilize the myriad advancements in all fields to build a responsible generation and equip them with the needed skills and self competence, so they are ready to face all future challenges without the fear of what’s after.

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# Part I

The How ...

Education & Learning - Debates, Lacks and Resolutions

**The How ...  
Education & Learning – Debates, Lacks and Resolutions**

**1. Overview**

Over the years, the learning process and the educational system in all its various aspects, contexts, and forms have been put under questioning and were the central focus of many debates that discuss its sufficiency, lack, and potential and provide multiple approaches for development and improvement. Many aspects were discussed by various giants of many fields, starting from teachers and educators (i.e; John Holt), authors, philosophers (i.e.; Ivan Illich), sociologists, organizations (i.e; OECD, UNESCO), and reaching directors and professors of Urban planning and development as well (i.e.; Angela Million). Many arguments have been held at different scales, providing different perspectives and opinions for solutions to bring forward the education process and shape a better and healthier environment for the coming generations.

**2. How Traditional Education Causing Limited Progress**

**2.1. Reasoning Basis**

We shall start with a brief introduction to John Holt and Ivan Illich’s biographies, where we mostly discuss their critics, perspectives, and ideas about the traditional educational schooling system in this section of our paper.

John Holt – an American author and educator with a degree in engineering – was famous for his support of the idea of homeschooling (especially the unschooling approach) and his contributions and efforts for educational reform. Holt inspired many of those who seek alternative ways of education and learning rather than traditional schooling. He wrote a number of books on education (i.e. *How Children Fail* (1964), *How Children Learn* (1967), *Learning All The Time* (1976), etc ...) in which he discussed his perspective on the problems of the American education system, stating the facts and fundamentals of learning and providing solutions for a better learning experience and effective educational outcome. (Gaither, 2015)

Moreover, his arguments and ideas about homeschooling and unschooling were calling for an education process where the child is at its center. This would allow children to have the opportunity to choose freely what they are curious to learn and what they are interested in while moving at their own pace and in their own way. This in turn will reflect on a healthier learning environment and a better learning output. (Gaither, 2015)

Ivan Illich – an Austrian/American philosopher, priest, and social critic – as for John Holt, was calling for the unschooling approach in his own way. He clearly stated his opinion in his most famous work

“Deschooling Society” (1971) where he argued that schools are not necessary for educating children and for learning to take place. He also highlighted that schools negatively affect children where they are taught to be passive and dependent, they are committed to a certain pace rather than their own. (Cooley, 2023)

In his book, Illich called for a radical transformation of the educational system, and he also proposed some alternatives to traditional schooling. Some of these alternatives were that we can provide learning through different approaches such as apprenticeships and internships, which will reduce the gap between education and professional practice, or allow children to explore their interests on their own. He also suggested the idea of “Learning Webs”, which is a platform that allows everyone to share their knowledge, skills, and experience with others. (Cooley, 2023)

John Holt and Ivan Illich are considered one of the most influential educational visionaries who had a lasting impact on our current learning ways and processes.

**2.2. Limited Educational Methods and Confined Learning Environments**

In our educational system, the learning process and the acquisition of knowledge are always limited to the curriculum, the teacher, and the school, especially for children. It offers very limited flexibility and alternative pathways and in most cases a total absence of them. We are taught that school is the main place where learning can happen, it is the place where you can learn about everything, and gain sufficient knowledge to develop, to grow, and to be successful. The child is forced to spend most of his critical years’ time in confinement, where he is always limited to specifics rather than to the whole. He wastes his precious years of development, where he starts to build his own perception of the world surrounding him, develop his intelligence, and discover his full potential of talents, skills, and capabilities. (Illich, 1972; Holt, 1995; Holt, 1967)

Children are not allowed to have the maximum opportunities for self-exploration and discovery; they are not allowed to search outside the curriculum and think outside the box, so they can find their passions. They are confused and lost between the satisfaction of their parents, the needs of their teachers, and the opinion of the adults around them, as to following the instructions of the school and the educational system. They don’t know if they pursue their urge to find what they really want, what they believe in, and what they have a passion for, or just accept and consent to the surrounding oppressions. (Illich, 1972; Holt, 1995; Holt, 1967)

We all know that the learning concept is way far from all these obligations and conditions. It is not restricted to a certain series of subjects that defines a particular curriculum. It’s not fixed to a specific place where you should attend daily and follow some instructions and pass some tests, but learning and the acquisition

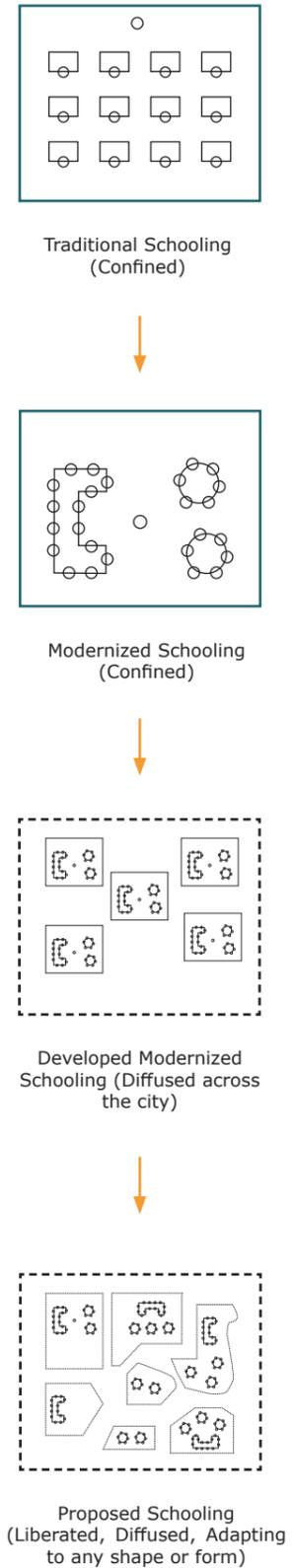


Fig.1. Traditional Schooling to the Proposed Modernized Schooling.

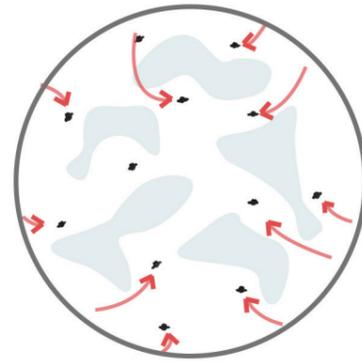


Fig.2. Confined & Limited Learning Environment

of knowledge happens everywhere and all the time. However, we are forcing children, adults, and every seeker of learning to commit to certain methods and pathways believing that it is the only way for success as we were taught.

Our traditional learning spaces and environments lack the needed dynamism, flexibility, and collaborative opportunities for an interactive and inclusive learning experience to take place. Our learners find difficulty in evolving freely due to the lack of adequate learning spaces. The learning spaces are a major key factor in providing a healthy, engaging, and effective learning experience.

All of these limitations, lack, and restrictions contribute negatively to a learning experience that should be suited to the needs of each learner.

### 2.3. Educational Inequalities and its Impact on Society

There are certain remarks on the educational system that highlight its inequalities causing social polarization and segregation. This issue is evident in societies that have an unbalanced distribution of resources and wealth, and the unease of access to learning facilities and assets. The main reasons behind this can be summed up in the rigid educational structures that are forcing the need for standardization and certification of success, rather than the evaluation of real qualifications and skills. (Illich, 1972)

To clarify, giving an example of two students in the same classroom of the same school, but outside this room and the boundaries of their educational platform, they both have come from very different social classes. Unfortunately, also they have extremely distinct lifestyles, access to resources, and tools that can be utilized to serve

them on their way to success. (Illich, 1972; Bartlett, Schugurensky, 2020)

Going back to how roles are assigned and how benefits are offered in the community mainly depends on these kinds of accreditation which is meant to be the main tool of value recognition. These highlighted problems show that the unequal availability of opportunities and possibilities for success is what leads to social distinction, and what calls for the urgent need to redefine these guidelines and frameworks, reshaping the traditional schooling models, directing the learning process into a learner-centric experience that is tailored to the needs of each individual learner, and ensuring equal opportunities for success and development for all. (Illich, 1972; Bartlett, Schugurensky, 2020)

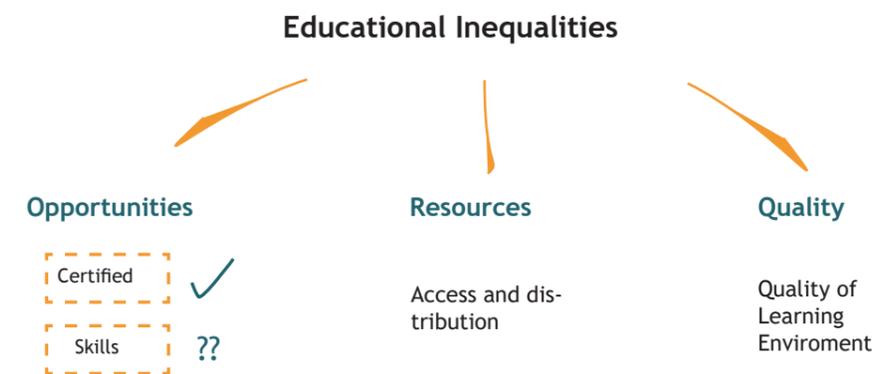
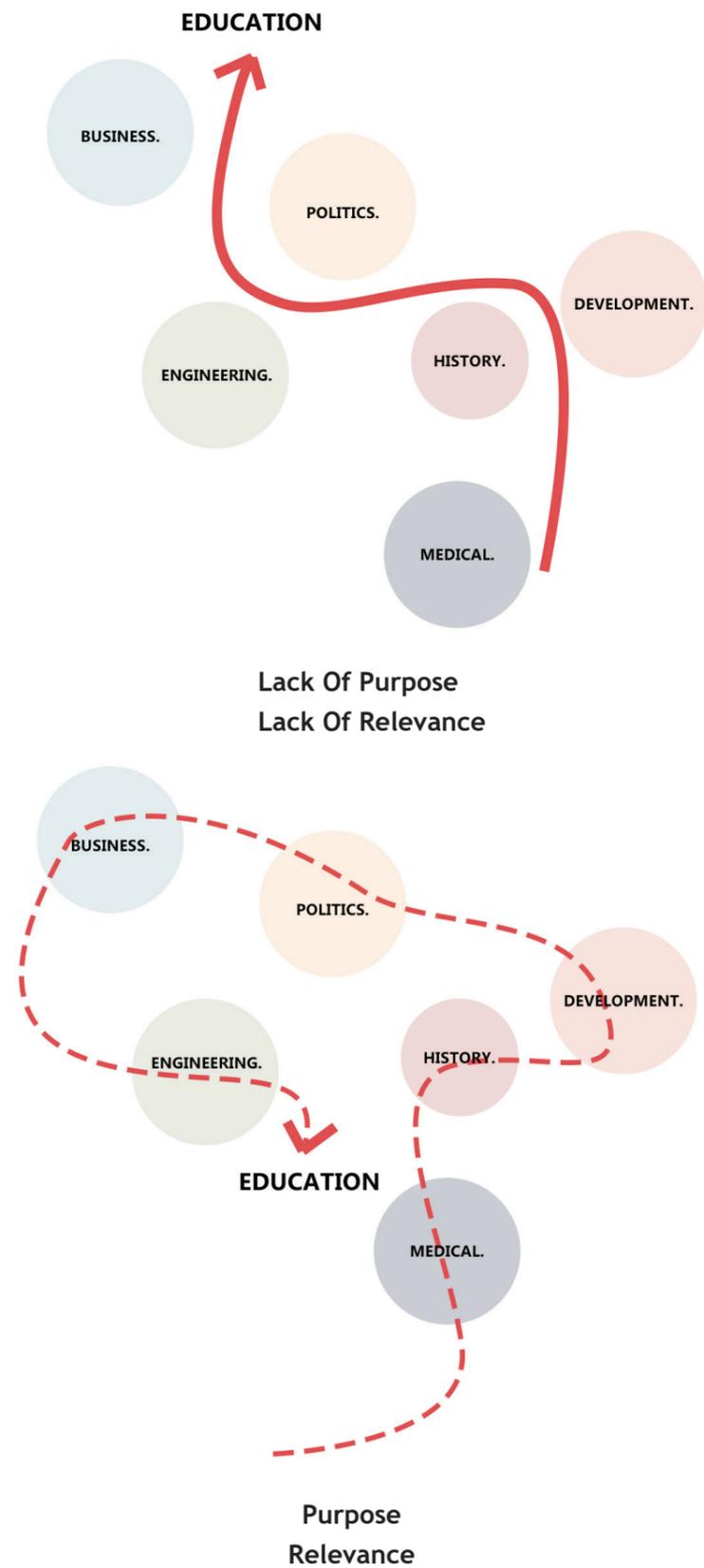


Fig.3. Showing educational inequalities.

### 2.4. The Gap between the Real World, Professional Practice and What we are Taught

Throughout our traditional educational journey, we are not offered a clear narrative and a direct approach to meet certain needs and ambitions. We are usually provided with minimal learning activities that are relevant to real experiences, which we can utilize to develop the required set of skills for a specific career we are aiming for and want to pursue. We are obliged to learn and understand the given subjects of different fields that we are continuously questioning their relevance to the real world and our future careers. We ask ourselves if this matches our interests and passions and if it suits our vision and ambition for who we want to become. We start wondering about all the time we spent delving deeper into the different topics, where the experience and knowledge are mostly theoretical and that we may never use in practice. (Dewey's Philosophy on Experience and Education, 2017)

Over time, we start having the fear of what the future holds for us and what it really looks like. We start to worry about whether we are prepared and equipped with the needed knowledge and capabilities to face the challenges of the next practical and professional stage in our lives. After we finished our educational stages, we found out that most of what we learned was not really in compliance with the market needs. We figure out that we don't even have enough



knowledge about the different platforms, societies, cultures, or even our environmental well-being. We continue to let our fear and worry haunt us with the feeling of not being ready to compete in the global economy and that we lack the needed knowledge for it. This knowledge and skills that we yet need to acquire, are not mainly meant for our success, but actually to allow us to cope with the new challenges and do our best to survive. (Dewey's Philosophy on Experience and Education, 2017)

It became obviously clear that these wonderings and questions are highlighting the core of our issue and that we need an instant response to provide a better future. We always separate learning from professional practice and realistic experiences and treat them as two separate platforms. However, all of what we learn through the different educational stages should prepare us for the workforce, and we should make sure that both education and professional practice are integrated throughout the whole learning process. The approach of learning through a series of quality experiences and valuable interactions, while utilizing the physical and social surroundings to ensure the suitable conditions for a healthy and effective learning process.

In order to overcome this huge gap, we should adopt the flexibility of transition and allow the overlap and interaction between both fields of education and professional practice, so we can maintain a unified and holistic learning experience.

All these highlighted issues of inequalities, limitations, confinements, and irrelevance of education to professional practice, workplace, and real-life careers are definitely blocking the holistic progress of children while restricting the authentic flow and form of learning, which should be released from its ties, liberated from its confinements and diffused outside the institutional boundaries.

Fig.4 Showing The Gap between the Real World, Professional Practice.

### 3. How is an innovative Learning Approach?

#### 3.1. Liberated Learning Experience

To give a child all the opportunities and possibilities that he needs to grow, we must understand how he develops and what he needs to be able to build himself in his own way. We must create environments that provide him with all the necessary tools that can allow him to discover his full potential from the very beginning. It's our duty, and I mean all of us, to understand how children learn and perceive the world, and to provide them with the help they need in their own way. It's about how to let them be and how we can stand behind to guide, watch, and see. (Holt, 1967)

We often say and recommend that educational and learning environments need to be more flexible, more exposed, integrative, and interactive. They need to be widely spread, accessible, and inclusive, and yet we lock them up to certain boundaries and in specific points of the city rather than everywhere.

Children want to explore the world around them without boundaries. They want to move around freely, be included in everything, and try everything without constraints. They simply want to own their world and explore themselves within. (Holt, 1967)

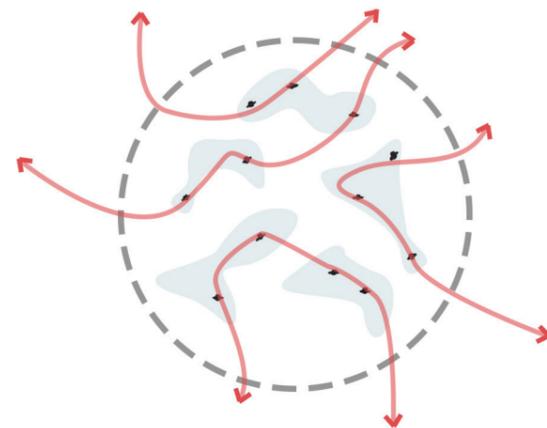


Fig.5. Liberated Learning Environment

### 3.2. Constructing the Main Key Factors Influencing Learning and Development

Children's development and growth depend on the presence of certain essential factors in their environments. These conditions are considered to be the main key factors affecting the learning process. They should guarantee the removal of barriers, the expansion of horizons, the provision of flexibility and homogeneity, and the offering of tools that enable children to self-discovery and understanding. (Holt, 1967)

For a child to mature properly, he needs to holistically develop his physical and mental health. The physical well-being and psychomotor skills are developed through interaction, movement, and exploration of the surroundings; While the mental and cognitive aspects are grown by being exposed to different situations within flexible environments. They build their intelligence and intellectual awareness with different means of communication and playful atmospheres. They start to learn how to feel and express different emotions through their relationships with various people of different ages, as well as direct contact with all the diverse materials and contexts. (Holt, 1967)

#### 3.2.1. Interaction

Interaction as a noun is defined in the Merriam-Webster dictionary as "doings between individuals or groups" and also as "the action or influence of things on one another" (Merriam-Webster, n.d.; Holt, 1967). It is clear from both definitions that actions are the main source of influence on both the person doing it and everything around him. At an early age, we start to learn through them, we begin to understand who we are and discover more about the surroundings whether people, objects, or the physical environment. Through these means of communication, we continue to develop and grow; we start to connect with the world, experience emotions, solve problems, acquire skills, build relationships, and reflect on what we learn while thinking critically.

Interaction is at the heart of the learning process and it is the main key factor of self-development cognitively and physically. (Holt, 1967) It has a variety of forms which all influence and hugely impact a person's capabilities and shape his perception. It can determine the quality of physical and mental well-being and how suitable an environment is for people to grow and progress.

#### 3.2.2. Games & play for better learning

Playing and games are very important when it comes to learning. They are an essential tool for educating children, where they provide children with the opportunity to explore and discover through excitement, and to encourage their curiosity for knowledge. They help them master their psychomotor skills and understand the full potential of scale and space.

Through play, children are always motivated to see more and

try more. It gives them the freedom of creation and flexibility of imagination, it is how they can acquire different talents and skills and how they can gain the ability of improvisation. (Holt, 1967; Dudek, 2005)

### **3.2.3. Movement and its impact on intelligence, awareness and cognitive development**

As we grow older, we come to understand the importance of movement for self-development especially at an early age. Movement helps us grow through exploration, know more by discovery, and get to see various settings and feel different emotions through exploration. It shows us more of the world we live in and allows us to dig deep into its diverse aspects.

With movement, we expose ourselves to a variety of situations where we meet new people with various backgrounds and cultures. We test different objects, experiment with countless materials, and uncover numerous environments. All of these experiences unlock the doors to new possibilities and widen our horizons. (Dudek, 2005; Coppola, Tortella, Coco, & SGRO, 2020)

Through movement, we begin to understand our emotions, develop our senses, and set the foundations of our awareness. It allows us to create connections and build our intelligence. This whole process is the main tool for the development of our psycho-physical motor skills, which ultimately leads to our growth and evolution. (Dudek, 2005; Coppola, Tortella, Coco, & SGRO, 2020)

### **3.2.4. Flexibility**

Flexibility is essential for the learning experience to be more holistic and integral. It is not only meant to be in space design and configuration of learning spaces, but it's a concept that should be adopted in the whole learning process and educational system. It is our means to ease the transition between different settings, fields, and platforms. It is the tool that allows the overlap between a variety of contexts, cultures, ages, practices, professions, and worlds. It is what gives the possibility of having a more homogeneous and inclusive learning environment. (Learnlife, n.d.; Oblinger, 2006)

In other words, flexibility is a key element in creating learning environments that can meet the needs of all learners. It allows them to learn at their own pace, explore in depth the different subjects and fields, and move freely where they can experiment their knowledge with real-time applications. This will lead to a more inclusive learning environment that can help learners develop essential skills such as critical thinking and creativity.

To sum up, flexibility is a main key factor for creating a successful and inclusive learning environment. It should be integrated into every aspect of our educational platforms to offer a better and healthier overall learning experience.

### **3.2.5. Personalization**

Personalized education is a learning approach that puts the student's needs at the center of the learning process. It tailors the instructions to meet each individual learner's needs. There are several ways to apply this approach, such as Montessori method, adaptive learning, or competency-based learning. (Grant, & Basye, 2014)

Students normally view learning as a process rather than a specific sequence of levels or a certain speed of learning. They view it as a process of learning ideas, then combining these ideas to form new or bigger ones, and finally experimenting them through application and trial and error process.

In a personalized learning approach, students will find the needed help and guidance to learn more effectively. The main focus of this approach is to allow students to learn about their passions and interests at their own pace and acquire the needed skills and knowledge for their success. This will positively reflect on an improved academic outcome, increased creative skills and awareness, and an overall unique and personalized learning experience suited for every child. (Grant, & Basye, 2014)

In the personalized learning approach, each student seeks his interests through deep understanding, experimentation, and application, rather than gathering knowledge without the awareness of its reflection in real-time activities and applications. He gets involved in his learning process through the use of different technological means that help him develop his skills, meet his interests and needs, and attain certain ends.

For Personalized learning to take place, learning environments should be designed to meet this personalization as well. The learning spaces should be catered to provide the opportunity for all learners to seek what, when, and where they want to learn. These environments should be able to adapt to different space configurations for various-sized learner groups (solo - large groups) within the same space. This will offer the flexibility needed for learners to meet their needs and be more engaged.

#### **3.2.5.1. The Montessori Method**

The Montessori Method is one of the early examples of personalized education. It was developed by Dr. Maria Montessori - an Italian physician - in the early 20th century. This method is a child-centered educational approach, where it focuses on specific aspects of its learning process, such as self-directed learning, independence, multi-age learning groups, etc. (Epstein, n.d.)

Montessori classrooms are typically equipped with a variety of materials and activity stations that allow students to learn at their

own pace and in their own way. These materials are designed to be self-correcting so that students can learn from their mistakes on their own, as well as through the guidance of trained Montessori teachers who provide the needed support and motivation. (Epstein, n.d.)

The Montessori method helps students to discover their full potential and develop their creative skills and talents. The flexibility of its environments, the ease of movement and exploration, and the learn-by-doing approach; allow students to meet their needs and prepare them as lifelong learners who understand how to think creatively, seek knowledge, and have the awareness to solve complex issues. It also helps them develop their social, emotional, intellectual, and physical skills. (Epstein, n.d.)

Montessori materials and classrooms are designed to meet different age groups learning interests and tools. It understands how they learn and provide the needed tools that support their learning process and development. For example, children from 2-6 years old are interested in sequencing and sorting objects. They are usually drawn to the sensory properties of objects within the classroom: size, shape, color, texture, weight, smell, sound, etc. (Epstein, n.d.)

On the other hand, Elementary and secondary students are more interested in sequencing and sorting ideas rather than objects. Their classrooms are designed to facilitate discussions and stimulate collaborative learning. This allows them to delve into the depth of topics rather than only covering the material. This clearly shows how the learning experience is tailored to each child at every age. (Epstein, n.d.)

### **3.2.5.2. Adaptive Learning – Personalized AI**

Adaptive learning is another example of personalized education. In this approach, technology is an essential tool for an effective learning process to occur. Technological AI systems are used to track student progress and to provide him with the support and guidance he needs to meet his goals and develop his creative skills. Each student is provided with an individual assessment, a personalized learning program, and customized feedback. (Shearer, n.d.)

### **3.2.5.3. Competency-based Learning**

Another approach to personalized learning is Competency-based learning. In this learning approach, students are not evaluated according to their mastery of particular subjects or educational levels. They are graded according to their mastery of certain skills or talents. In this way, students are allowed a high level of flexibility and progress where they can learn and focus on their areas of interest and find the support they need for their success. (Shearer, n.d.)

Personalized education has shown its importance and potential in providing efficient and effective education that fits the needs of each individual learner and suits his learning style and interest. With the continuous evolution of technological tools and systems, the learning experience can continue to emerge and flourish in the following years.

### **3.2.6. AI and Technology Integration**

As previously discussed in the Adaptive Learning approach, Artificial Intelligence (AI) and technology can be utilized to be used for educational purposes and enhance the overall learning experience.

AI can support students in their learning process, and assist teachers in the creation of content and programs. It can be utilized in all STEAM (science, technology, engineering, arts, and math) fields, where it acts as a source of inspiration for students to help them generate ideas and solutions of high quality, as well as guide them in their process of learning essential skills and talents that are required for the job market. (Miller, 2023)

Many types of AI can be integrated into our learning platforms, such as Chatbots, Virtual, Augmented, and Mixed Reality, etc.

#### **3.2.6.1. Chatbots**

Chatbots are computer-based programs that can provide interaction with humans through text or voice conversations. This kind of AI program acts as an intelligent tool that can offer personalized support and assistance to students and teachers and help them with answers to various questions on certain subjects from a huge background database. There are several examples of chatbots, such as ChatGPT, Google Assistant, etc. (Stanford Graduate School of Education, 2021)

#### **3.2.6.2. Virtual Reality (VR)**

All three types of AI Realities are interactive tools that enhance the overall human Learning experiences. (McDonnell, 2021; Roberts, 2021)

Virtual Reality (VR) is a computer-generated environment that allows users to be immersed in it so they can have a realistic and engaging learning experience. VR environments are completely digital worlds where their users don't have any knowledge about the physical world around them. (McDonnell, 2021; Roberts, 2021) These environments can have endless possibilities, from going into space to flying a plane in the sky, going underwater, or even traveling to the sun. This variety of options can provide unique and safe learning experiences that are difficult to have in real-time activities and that are easy to control. These experiences will help students to explore complex systems and understand various concepts in different fields.

Virtual Reality is also a very important tool when it comes to students

with disabilities. It helps them feel safe while exploring environments in a friendly way. It is an essential tool that can be used to support literacy activities for children with intellectual disabilities, so they can correctly write and pronounce the names of our daily-life objects. (Coppola, Tortella, Coco, & SGRO, 2020)

### 3.2.6.3. Augmented Reality (AR)

Augmented Reality (AR) is a technology that overlays a computer-generated image or information onto the user's view of the real physical world. It can be experienced through a mobile device but you cannot see this image in the real world outside of this device. AR can be experienced with complete knowledge and awareness of the physical world around. This technology can offer an endless variety of interactive learning experiences, where students can take a visual tour of a historical site or explore a 3D model of an atom. (McDonnell, 2021; Roberts, 2021) This can help increase their knowledge and awareness about the world around them.

### 3.2.6.4. Mixed Reality (MR)

Mixed Reality (MR) on the other hand is a combination of both VR and AR.

MR technology can be experienced through wearing a set of tools (i.e. HoloLens, Magic Leap, etc.), that allows the user to interact with both the real world and the digital world. As soon as the experience initiates, the MR technology starts mapping the physical world around, by creating a 3D mesh model that matches all the features of the real physical world and immerses it in the user's experience. (McDonnell, 2021; Roberts, 2021)

Mixed reality allows its users to overlay and place objects in the real world. It even allows them to create new 3D objects and surfaces with full control of it in this overlaid reality on the existing physical one. (McDonnell, 2021; Roberts, 2021) This creates a more immersive and engaging learning experience, such as conducting dangerous or impossible chemical experiments performing surgeries on human bodies, or even creating new architectural designs. These MR experiences can all occur in real-time environments and even in public spaces.

In conclusion, the use of these different forms of technologies and AI tools will help revolutionize our educational experience and improve it into a more personalized and efficient one. Finally, the integration of these technologies in our different space typologies will contribute to the goal of transforming our daily used spaces into interactive and engaging learning platforms.

## 4. How is an Effective Learning Environment?

### 4.1. The Learning Environment as a Catalyst for Change

*"We spend a lot of time trying to change people. The thing to do is to change the environment and people will change themselves."*

*Les Watson, Pro Vice-Chancellor, Glasgow Caledonian University".* (Learnlife, n.d.; Oblinger, 2006)

*"Spaces are themselves agents for change. Changed spaces will change practice."*

Alexi Marmot: Designing Spaces for Effective Learning. (Learnlife, n.d.; Oblinger, 2006)

These statements highlight that learning environments are the starting point for change, and it is where we can initiate our transformation and development journey for better future learning environments. They show the strong impact that our environments have on people's behavior, learning abilities, and readiness for change. They also strengthen the importance of designing our spaces to meet the needs for change and learning, and that it can provide the possibility of a lifelong learning experience in every learning environment. (Learnlife, n.d.; Oblinger, 2006)

When designing learning environments, we should understand the profound impact they have on the overall learning process. Our learning spaces should support learning rather than drive it. They should be highly compatible with technological trends and integrate its tools, and they should take into consideration how information technology has changed the day-to-day interactions of learners with information and knowledge, with the world, and among themselves. (Learnlife, n.d.; Oblinger, 2006)

The traditional model of our educational spaces should be reimaged to suit the contemporary needs of learning. New learning paradigms need newly designed learning spaces that can afford radical change. (Learnlife, n.d.) One main feature of contemporary learning environments is their availability and ease of access. The different space functions can be remodeled to host learning activities within its platforms. This can create unique synergies that will have a strong impact on the learning culture and offer various opportunities that were not available before. It will also provide the possibility of re-purposing all space typologies to become effective, collaborative, interactive, and unique learning platforms.

In conclusion, designed learning environments are the driving force for concrete change. Our physical learning spaces can empower learners and support them to become lifelong learners. They can provide not just beautiful spaces, but rather environments that can be easily shaped and reshaped to meet their goals, suit their ambitions, and fit the different learning styles and options. They can also help us sustain the continuous change in the global market needs and trends, and deliver an exceptional and successful learning experience.

### 4.2. Main Standard Types of a Learning Space

In this point, we are trying to elaborate the basic types of learning spaces which should be present in any learning space design. These standard types are identified by Dr. David Thornburg through his

educational journey and contributions. (Learnlife, n.d.)

#### 4.2.1. David Thornburg

Dr. David Thornburg is an educational specialist and an award-winning futurist, author, and consultant. He is the founder and director of the Thornburg Center, a non-profit organization that promotes innovative learning practices. Thornburg is also a co-founder of the Thornburg Center for Space Exploration, which works to inspire students to pursue STEM careers. (Premiere Speakers Bureau, n.d.)

Thornburg is a main supporter of project-based learning, and open-source software, which he believes in their effective impact on learning and education and that they are the best way to prepare students for the 21st-century workforce. (Premiere Speakers Bureau, n.d.)

Thornburg's work is also pioneering in communicating how architecture and design have profound impacts on learning. He wrote several books on education, including "Shift Control: Reflections on Education, Technology and the Lives of Today's Students" and "From the Campfire to the Holodeck: Creating Engaging and Powerful 21st Century Learning Environments." (Learnlife, n.d.;;) He is also a frequent speaker at conferences and workshops on education. (Premiere Speakers Bureau, n.d.)

David Thornburg's ideas were always promoting creativity and innovation in education. He constantly supported the project-based learning approach and the personalization of education where the student is in control of his own knowledge. His passion and efforts have highly contributed to shaping the future of learning. (Premiere Speakers Bureau, n.d.)

Dr. Thornburg identifies three standard types of learning spaces – the cave, watering hole, and campfire. These types can be used by schools as physical and virtual spaces for student learning. They can also be utilized as main principles for learning space creation of the different scales within our learning city fabric. In addition to these three learning space types is a fourth one – life – which reflects the real-world experiences that we are usually exposed to in our daily activities. (Premiere Speakers Bureau, n.d.)

#### 4.2.2. Cave

The "Cave" as it sounds, represents isolation and block out. It is a space where a student can think individually and isolate himself from the external distractions of the surrounding environment. It is a space of self-reflection and independent work, which provides the environment needed for self-development and internal growth. It is where the learner can build his belief system, organize his thoughts, and cultivate his creative skills and abilities. (Learnlife, n.d.)

A student can emerge from the cave utilizing the information he

obtained and the perception he created in collaborating with others, exchanging his knowledge, and adding to their learning experience. This process can take place in the next type of learning space which is the "Watering Hole". (Learnlife, n.d.)

The cave is not only a physical learning space, but it can also extend to be a virtual learning one. The "Virtual Cave" is a space where a learner can work independently using digital technology such as blogs or vlogs. (Learnlife, n.d.)

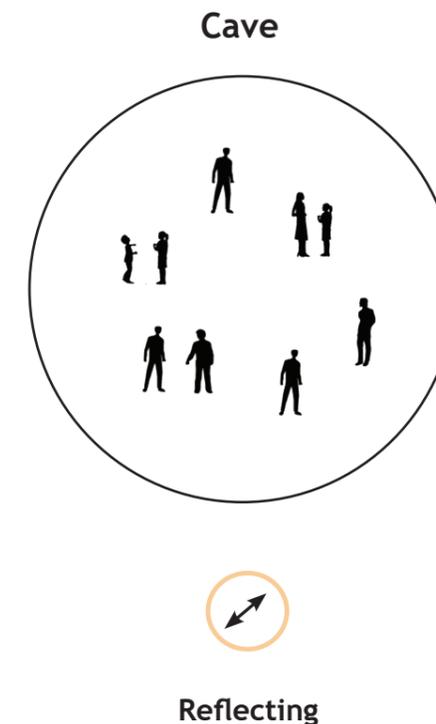


Fig.6. Cave as a Learning Space

#### 4.2.3. Watering Hole

The "Watering Hole" is a space of collaboration and discussion. It is a space where students can share their vision and connect their ideas. They can discuss together the different topics and work collectively to complete tasks. (Learnlife, n.d.)

The watering hole is an informal space where learners can exchange knowledge and information, share discoveries with their peers, and act as learners and teachers at the same time. This will create a motivating atmosphere that will help to influence a positive relational network and a powerful learning culture. (Learnlife, n.d.)

As it is a collaborative space, individuals can benefit from it through a series of different interactions between students, teachers, and all types of learners. It is a space that is designed to enable freedom of movement and improvisation. (Learnlife, n.d.)

### Watering Hole

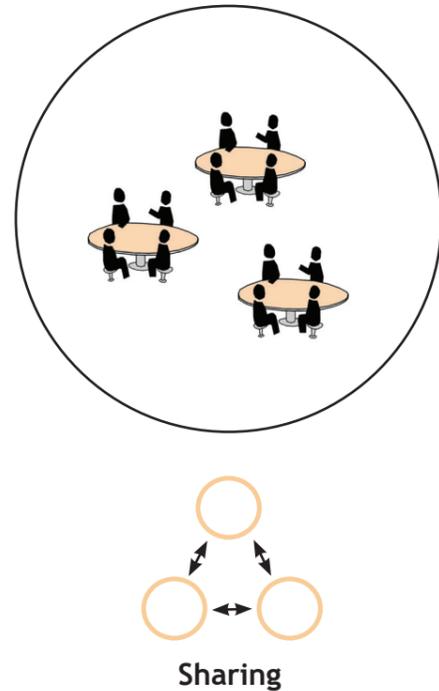


Fig.7. watering Hole as a Learning Space

In relation to the “Virtual Cave”, the physical watering hole has a virtual extension as well. The “Virtual Watering Hole” is an online collaborative space, that includes all Web 2.0 tools and other online collaborative platforms that facilitate group networked learning. Web 2.0 tools are a series of internet-based tools that allow users to interact through various social networking sites, blogs, video-sharing sites, wikis, video-sharing sites, web apps, hosted services, and other collaborative platforms. (Learnlife, n.d.)

This kind of tool can provide ease of communication, interaction, collaboration, and access to information, which will reflect on a positive engaging learning experience.

### 4.2.4. Campfire

The “Campfire” is a space of gathering for the purpose of knowledge transmission and culture preservation. It is where learner groups meet to receive guidance and instructions from the more experienced and wiser elders. A space where insights and expertise can be passed down through storytelling from the wise individual. Today, experts are not only teachers, but they can be students or learners who share their knowledge with their peers and other teachers as well. (Learnlife, n.d.)

The “Virtual Campfire” is an extension of the physical campfire. In this medium, students have the freedom and flexibility of access to expertise using digital technology. It is a virtual space that offers learners an unconstrained availability of the master teacher or expert at any time and anywhere. It provides the support needed for students in whatever area of mastery they seek. (Learnlife, n.d.)

### 4.2.5. Life

“Life” is all our real-world spaces but perceived and understood as spaces of learning, so that learning can happen all the time. It is the essence of the “Lifelong Learning” concept, where learning can take place everywhere. (Learnlife, n.d.)

“Life” is a reflection of the authentic life spaces that we inhabit, but prepared and acknowledged as part of a learner’s journey. They are considered learning environments that can offer learning opportunities for all individuals and different age groups. (Learnlife, n.d.)

The types of “Life” spaces can be anything, it may include neighborhood facilities and spaces. It can vary from streets to bus stops, markets, professional practice spaces, museums, subways, shopping malls, or any other space typologies that we encounter in our day-to-day activities. This will create a learning community that is aware of these learning environments and can utilize their benefits for their purpose. (Learnlife, n.d.)

Realizing our life spaces as places of learning will provide limitless and timeless learning opportunities. This will urge individuals to

### Camp Fire

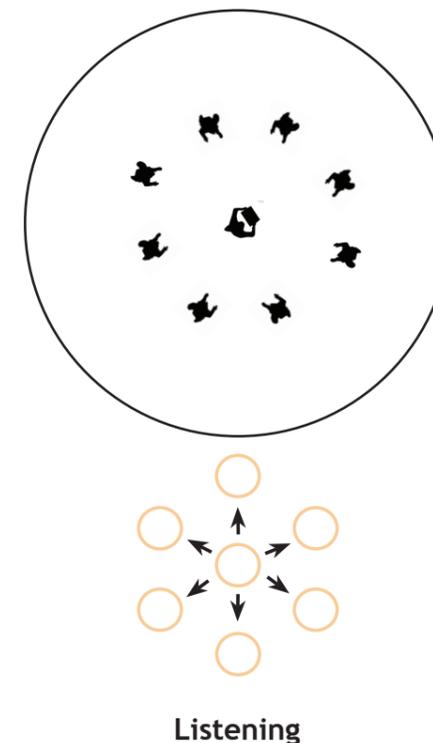


Fig.8. Campfire as a Learning Space

extend their learning beyond the boundaries of traditional learning institutions and away from their time constraints. This can promote a mindset of generations with a tendency towards lifelong learning. (Learnlife, n.d.)

The cave, watering hole, campfire, and life spaces help us understand how to prepare and transform our spaces into inclusive and interactive learning settings. These settings can provide learners with a holistic learning experience through various exposures and endless learning opportunities.

These learning space types provide a holistic lens for perceiving our learning platforms. They move beyond viewing only the physical aspect, and broadening the recognition of other essential aspects such as the virtual, emotional, social, relational, and pedagogical. This will reflect in increasing the creative potential of our learning environments. (Learnlife, n.d.)

These types can be scaled up to a city scale, where they are realized in all our urban environments and the different space typologies. They can be achieved in both virtual and physical mediums, which will offer a suited learning experience for all ages in all aspects.

### **4.3. Core Foundations and Key Elements of Successful Learning Environments**

The physical learning space design should provide a multi-dimensional learning environment that maintains an inclusive and interactive learning experience. This design should consider certain key factors that enable its success; These factors include:

#### **4.3.1. Flexibility**

Previously in this paper, we highlighted the importance of flexibility and how it is a main factor in providing a successful learning experience. In this section, we will try to identify how it defines the shape of a learning space.

Flexibility in learning spaces can be achieved through various ways. It can be seen in the ease of space reconfiguration (i.e.; movable furniture, movable walls, etc.), so it can accommodate the different kinds of learning activities and host solo to multi-sized learners groups concurrently. (Learnlife, n.d.; Oblinger, 2006)

It can also be seen in enabling the support for different teaching methods and learning approaches, such as personalized learning or blended learning and many others. It may as well include being future-proof, so it can flexibly adapt to the newly emerging learning paradigms. This in turn will reflect on the ease of communication and knowledge exchange between the different learner's age groups. This could include movable furniture, versatile walls, and adjustable lighting. (Learnlife, n.d.; Oblinger, 2006)

The flexibility concept in the design of learning space also includes a broader meaning. It lies in the reimagination of traditional educational spaces into a more fluid, dynamic, and scattered learning platform within our urban fabric and architectural space functions, so that learning can take place everywhere and all the time.

This flexibility of transition between the different learning settings will help enable the concept of learning on the move, where movement is considered an important aspect of a healthier and more effective learning experience.

Providing learners with this variety will enable them to experience learning spaces that can suit their needs at any time, which will lead to a powerful, dynamic, and more consistent engagement.

#### **4.3.2. Collaboration & Interaction**

One of the main standard types of learning spaces is the collaborative space. The collaborative space is a space of interaction and teamwork. It is a space that supports collaboration and interactive communication by all means. It should facilitate a strong, rich, and dynamic network that allows these factors to take place and help learners to work as a team. (Learnlife, n.d.; Oblinger, 2006)

Interaction presence in a learning space is an essential factor in obtaining a successful learning experience. It lies in enabling the conditions that allow various kinds of interactions. Interaction can occur in different ways including human-human interaction, human-space, human nature, human-materials, human-functions, human-technology, and many other forms of interactive communication. (Learnlife, n.d.; Oblinger, 2006)

On the other hand, Collaboration acts as a fundamental key element of a successful learning environment as well. It must be enabled to allow knowledge exchange and sharing of experiences among learners. (Learnlife, n.d.; Oblinger, 2006) It should occur between the different age groups, which will reflect on a multi-faceted learning experience for each individual.

A learning space must offer these key elements for all learners equally, regardless of their abilities and backgrounds. It should provide opportunities and spaces for teamwork, as well as group projects with peers of different backgrounds.

Creating larger and more open learning spaces will encourage interaction and collaboration among different categories including, teacher- teacher, student-student, teacher-student, etc. This will reflect on enhancing the overall learning experience and creating a strongly connected community.

### 4.3.3. Creativity

Sequentially, if a learning environment is flexible and collaborative, then it can be easily creative. Creativity in a learning environment lies in providing opportunities for different learning styles, where each learner can easily engage with them consistently. A creative learning environment must cater to the various needs of each individual. It must foster the skills and competencies required for learners to be future-ready. (Learnlife, n.d.; Oblinger, 2006)

In a creative learning environment, learners can explore their ideas and think critically, solve complex problems, and seek innovative solutions. (Learnlife, n.d.; Oblinger, 2006) In such environments that are suited for learners' needs, students have the urge to collaborate and create. They can take risks, make mistakes, and learn from their own experiences.

Creative learning environments are characterized by certain features such as flexibility, collaboration, and technology. This will help learners in connecting easily with each other and with the world around them. It will also prepare them for future working environments of high complexity and collaborative working.

### 4.3.4. Real-World

An important aspect of a learning environment is its relevance to the real world. An adequate learning environment should relate to the outside world. This can be done in various ways, including real-time activities, digital simulations, real-world scenarios, concrete case studies, field trips, or even using the various real-world environments with their different space functions as interactive learning platforms. (Learnlife, n.d.)

This will allow learners to experience the connection between what they are learning and its application in reality, as well as its relevance to the future careers they are seeking. It will also help them be more encouraged to learn, more motivated to explore, and strongly eager to develop their creative talents and critical thinking skills. Learners will be more committed to achieving success in their life goals and future ambitions.

In order to maintain this strong connection, these learning spaces might involve community members to share their expertise and use technology as a connecting tool to the outside world. (Learnlife, n.d.; Oblinger, 2006)

Overall, the relevance of a learning environment to the real world will help learners understand more deeply the world around them. They will relate to realistic narratives, expand their physical and mental awareness, and improve the overall outcome of their learning process and experience.

### 4.3.5. Open-access & Inclusive

Openness, accessibility, and inclusivity are essential elements of a learning environment. A learning environment should be inclusive as it is open and safe to all learners, regardless of their race, ethnic background, gender, or their physical and mental abilities. An inclusive learning space also means that it can include various learning activities concurrently. It is a space where everyone feels welcomed, and can fairly and equally contribute to the learning process.

It should be accessible in the meaning of its physical space accessibility to everyone and the ease of access to its resources. This will ensure that all learners have the same opportunities for learning and education in different fields while sharing equally the learning tools and resources.

The physical accessibility can be seen in providing means of access to the disabled including ramps, elevators, wide doors for wheelchairs, as well as restrooms and drinking fountains. It may also be seen in a broader meaning, that all spaces in the community can be utilized as potential platforms for learning. This may include outdoor and indoor public spaces, neighborhood facilities, streets, bus stops, markets, shopping malls, company platforms, .. etc.

On the other hand, the open access resources can be that of the physical learning space or digital resources, and they should be available in different formats so that all learners can access them. The physical resources may include textbooks, materials, furniture, and other learning tools. The digital resources could be, digital communication platforms, social networking sites, video-sharing sites, virtual mediums tools, .. etc.

Achieving these key elements in a learning environment will help learners reach their full potential and acquire the needed skills for their personal growth and development. It will help to create a more positive and supportive learning environment and will promote diversity and understanding for all learners.

### 4.3.6. Synergy & Interconnection

Reimagined learning spaces should consider synergy and interconnection as the main key elements for a successful learning process. Synergy and interconnectivity can take place in various forms. Synergy can occur between the different forms of learning and education, such as formal and informal learning, as well as their connection with the real world.

Interconnection can also occur between the different elements of the environment, where they can all work together providing an effective learning experience. These elements include people, resources, physical spaces, institutions, professional practices, governments, and many others. These various elements can create different synergies that are all created to support each other,

allowing all learners to reach their full potential and be ready for their daily practices and future challenges.

Overall, including these elements in our learning environments will improve learners' engagement and commitment, enhance their creative thinking and skills, and provide a diversity of exposure to ideas, experiences environments, and fields.

As the world is an interconnected place, learners will be more prepared to think creatively, collaborate effectively, solve complex problems, and find innovative solutions. They will be able to acquire the needed skills and knowledge for their success and development.

#### **4.3.7. Technology & Intelligence**

We live in a digital age that requires the reimagination of our learning environments so that they can provide for the needs of all learners and sustain future global challenges. The absence of technology or intelligence in a learning environment can reflect negatively on its efficiency. (Learnlife, n.d.; Oblinger, 2006)

Technology and intelligence play significant roles in today's learning platforms. They can be used to create immersive learning experiences and tear down the barriers of space, time, and distance. They can provide ease of access to resources of any format from all over the world, support learners through their learning journey, and connect them with experts and peers at any time. (Learnlife, n.d.; Oblinger, 2006) However, we must make sure that technology is not obstructing our human interactions, but rather supporting it.

The reimagination of our learning environments should also consider a broader aspect in its sense. It must rethink the spatial configuration of its urban, architectural, and neighborhood settings and construct the necessary digital infrastructure for innovative and intelligent learning platforms.

These smart platforms will consider electronic hardware and digital tools a core foundation of space as to its architectural elements. This will involve developing software that can activate these spaces and make them more useful. It can also include sensors, actuators, digital equipment, smart systems, and many other technological tools (i.e.; interactive whiteboards, mobile devices, etc.) that will provide electronically interactive learning spaces. (Learnlife, n.d.; Oblinger, 2006)

Our urban environments should encompass both the virtual and physical spaces within their boundaries, providing interconnectivity through learning. Technology can help bring together the physical and virtual mediums at the same time and go beyond the physical outlines of a learning space. As a result of this interesting hybrid, our actions will occur in both physical space and cyberspace simultaneously. In this sense, our traditional learning environments will transform into electronically mediated ones in their true essence.

By embedding up-to-date technological tools in our learning settings, we will be able to construct a network of smart learning spaces that are interconnected through a collection of interacting smart objects. This will result in obtaining timeless learning environments that can adapt to any future changes and new creative learning methods.

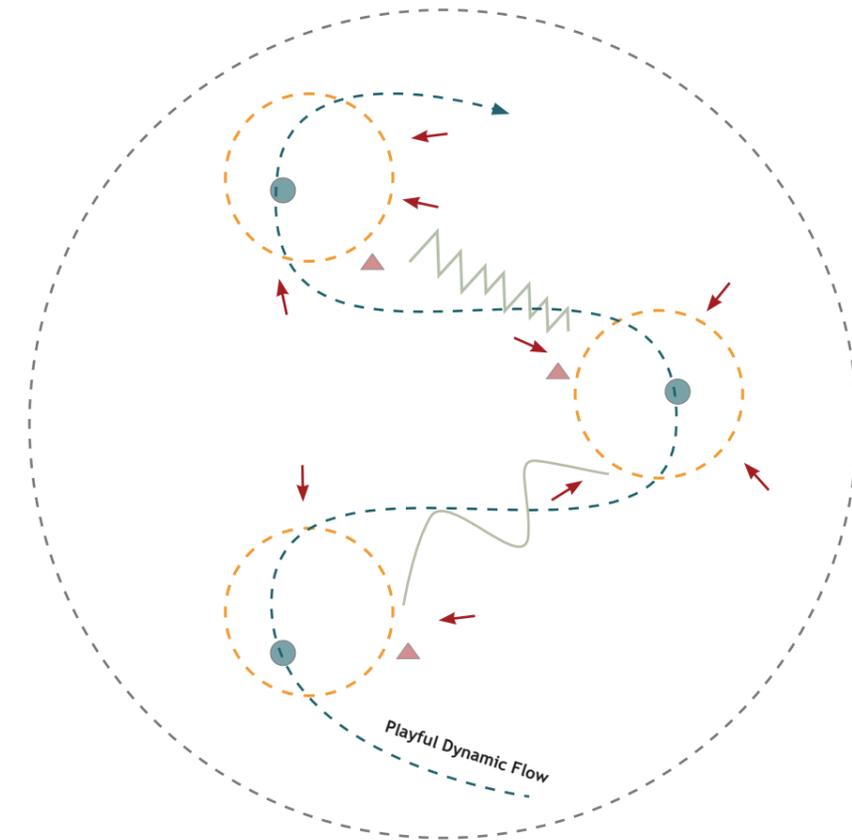
#### **4.3.8. Safety**

Safety is a very important factor for the successful operation of our learning environments and the effective engagement of learners with them. The safety of learning, play, and interaction within the various learning environments is threatened by many factors and facing many challenges. The lack of safety in our streets due to vehicular mobility is endangering our children's lives and even the adults as well. (Senda, 2015) The public parks and children's playgrounds lack the needed elder guidance, security control, and maintenance of playing instruments. (Senda, 2015) The emission of toxic gases and the pollution of our air medium are obstructing the potential of utilizing these public environments for learning purposes. (Senda, 2015) The inadequate safety of spaces and elements used in our day-to-day environments is subjecting different users, especially children, the elderly, and people with disabilities to danger. (Senda, 2015)

Safety can be provided using different solutions, methods, and technological means. Streets can be designed in a way that reduces vehicular usage and flow. Speed bumps can be constructed to reduce speed, and sidewalks can be enlarged to host pedestrian walkways and learning and interactive activities on street sides which will effectively prevent crime incidents. Public parks and spaces should integrate technological security systems of cameras and other surveillance tools. It should provide safe entries with human guidance and observators that validate IDs for kids and adults alike and can verify and identify any criminal methods or dangerous threats to community members of all ages. The design of urban landscapes and architectural spaces should incorporate safe-to-use spaces, surfaces, elements, and tools, where the different users and children can avoid endangering themselves.

Overall, it is obviously clear that all these core elements of a successful learning environment are interconnected and overlapping. Thus, providing any of them in our learning spaces will ease the way for the other ones to take place concurrently or sequentially.

Finally, a timeless and effective learning environment is one that achieves all these fundamental steps of transforming our learning platforms into innovative and inclusive educational environments, while adopting the main key elements of effective learning and standard learning space types for personal and collective growth. They are environments that promote unlimited opportunities for development and exploration. A space that removes pressure, offers a safe and engaging learning experience, and provides personalized support to all individuals throughout their learning journey.



**Inclusive Learning Environment/Experience**

-  Synergy
-  Learning Platform
-  Openness
-  Technology
-  Safety
-  Creative & Flexible activities
-  Playful Dynamic Flow
-  Interaction

**Fig.9.** Key Elements of Effective Learning Environments.



## **Part II**

**The What ..**

**The Essence of Learning & The Methodology For Change**

## The What .. The Essence of Learning & The Methodology For Change

This chapter explores the various forms of interaction, in which it tries to prove that it is the core essence of the learning process and the foundation of an effective learning environment. It shows that interaction is a focal point that links all future educational concepts (i.e.; Lifelong learning and learning city) and complies with the educational guidelines and frameworks of organizations such as OECD and UNESCO. Through this process of proof and demonstration, the chapter finally concludes by defining the notion of Interactive Learning Cities (ILCs) and how it is an essential approach to be adopted for the development and transformation plans of our cities, where they become interactive hubs of learning for everyone across the different ages and environments.

### 5. OECD Framework & Guidelines for Future Education

#### 5.1. What is OECD – an Overview

OECD as a name stands for “The Organization for Economic Co-operation and Development”. The OECD is a multi-disciplinary international organization based in Paris and consists of 38 member countries working together to construct better policies to improve our lives. It was established in 1961. (OECD, n.d.)

The organization’s main goal is to foster prosperity, equality, opportunity, and wellbeing for all through the shaping of policies that promote sustainable growth. These policies are being developed according to evidence-based analysis and economic data and have been a reliable source for more than 60 years since its establishment. (OECD, n.d.)

Through its work process, it provides a forum that allows its network of specialized committees, member countries representatives, governments, and other non-members from different regions all over the world to work together and share their experiences. This teamwork will contribute to the OECD’s main mission of improving economic and social well-being. (OECD, n.d.)

The OECD’s roles include comparing policy experiences, developing domestic and international policies, seeking answers to common and complex issues, and identifying good practices. These roles cover a wide range of topics including the economy, education, environment, health, trade, and social aspects. (United States Department of State, 2021)

The OECD experts produce thorough research and analysis based on the collection of evident data and facts and then use this research to make informed decisions and develop sufficient policies. These policies are relevant to all world countries, regardless of their level of development.

### 5.2. OECD Vision for Development and Tackling Future Challenges (The strong connection between learning and development)

Andreas Schleicher, Director of Education and Skills for the OECD, commented in 2019

*“Education is no longer about teaching students something alone; it is more important to be teaching them to develop a reliable compass and the navigation tools to find their own way in a world that is increasingly complex, volatile and uncertain. Our imagination, awareness, knowledge, skills and, most important, our common values, intellectual and moral maturity, and sense of responsibility is what will guide us for the world to become a better place.”* (OECD, 2019)

In his words, he highlighted the importance of education for overall global progress and sustainable development. He pointed to the necessity of directing our focus to educational development as it has a significant role in preparing future generations to lead the world to a better place, and it acts as a key factor in OECD’s vision for tackling upcoming challenges.

We cannot neglect the important role that technology plays in preparing today’s learners for future difficulties. By understanding the technological benefits and threats, we can identify the needed competencies to be provided for learners through their educational journey. Educational development should coop with that of the technological one and not have gradual progress, but a transformative change that can assure prosperity for all. (OECD, 2019) Success and prosperity should be affordable for the whole society, not making some suffer the social pain so that others to flourish.

As the rate of technological advancement is highly accelerating, the nature of work is highly affected as well. (OECD, 2019) Previously, the work process involved routine tasks that could be automated. However, with the current sophistication level that technology has reached, these types of tasks are being easily performed with the use of technology. (OECD, 2019) This reflects the new demands from the job market for workers with non-routine skills rather than workers with routine ones.

In order to prepare future learners with these non-routine skills, our educational systems and learning environments are being responsible for teaching them. These skills include critical thinking, problem-solving, creativity, and collaboration.

The high involvement of technology in the various job market tasks will create a cooperative workflow between humans and machines. This computer-human relationship needs to maintain its balance for a just and successful outcome. (OECD, 2019)

Currently, AI-powered algorithms are being used for decision-making purposes which requires an ethical judgment aspect. They are also being used for the evaluations of test scores and identifying competency for medical treatments, although they are not qualified enough to make such contributions. Computers are not as good as humans in some aspects like ethics, abstract tasks, manual tasks, and other tasks that require complex contextual information. On the other hand, they are good at routine cognitive tasks, and manual routine and non-routine tasks. (OECD, 2019)

For these kinds of reasons, we must recognize what computers are good and not good at. We should embrace technology as it is a powerful tool for learning, but we need to help future learners develop their understanding of morals such as ethics, and develop their analytical thinking and non-routine skills. In this way, they will have the needed competencies to be in charge, and to control the use of technology in an ethical and responsible way.

### 5.3. The Methodology for Change

The OECD has assigned great efforts to the development of educational systems and learning environments. It has been continuously trying to provide better learning frameworks and educational programs that can suit future learning needs. Today's educational platforms should be nurturing environments that accommodate learners and help develop them as a whole. They should include the different aspects of a learner's self-development, from social, to emotional, physical, and mental well-being.

The learning journey should be holistic and inclusive. It should prepare children, young people, and all learners to become responsible and productive. It should be broad in its essence, so that that learners are equipped with the needed competencies for upcoming challenges. They are being prepared for complex cognitive tasks, social and emotional relationships, professional opportunities, communal duties, as well to various life responsibilities.

The OECD "Future of Education and Skills 2030" project and the OECD "2030 Learning Framework" are good examples of the organization's efforts in recent years. The "Future of Education and Skills 2030" project aims to set goals for a better learning outcome and develop a common language for successful teaching and learning experiences. Afterward, the project stakeholders worked collaboratively to develop the "2030 Learning framework using the metaphor "Learning Compass". "The OECD Learning Compass 2030" aims to help students navigate through world uncertainties and develop the needed competencies for future complex challenges. (OECD, 2019)

#### ▪ The "DeSeCo" Project

The OECD has started the "Future of Education and Skills 2030" project journey by building on its definitions in the "DeSeCo" project. (OECD, 2019)

The "DeSeCo" as a word stands for Definition and Selection of Competencies. The project was developed by the OECD between 1997 and 2003, and it provides theoretical and conceptual foundations (OECD, 2019) for identifying the kind of competencies that learners need to acquire for the future. These selected competencies should encompass aspects such as knowledge, skills, attitudes, and values. (OECD, n.d.)

#### The DeSeCo project identified three main categories of necessary Key Competencies:

1. Use Tools Interactively: For individuals to interact effectively with the surrounding environment and communicate with society, they need to be able to use a wide range of tools, so they can utilize them for their own purpose. These set of tools include technology, language, knowledge, symbols and texts. (OECD, 2019)
2. Interact in heterogeneous groups: In an interconnected world, individuals will be in continuous contact with people of various backgrounds. They need to be able to interact and collaborate with other people in the community regardless of their ethnicity, or their physical and mental abilities. (OECD, 2019)
3. Act autonomously: Independence is a key competence as it helps individuals to be responsible for their actions and life decisions, and provide them with the agency to manage complex situations. (OECD, 2019)

All these three categories are interrelated and overlapping. They are also highlighting the importance of interactive communication between all the different elements of a society.

The DeSeCo project has been an important base for the development of educational policies in various countries during the past years. The key competencies identified in the project have been used as an effective tool for curriculum design and teacher training. It also helped individuals who are seeking lifelong learning journey to develop the required competencies for their goal. (OECD, n.d.)

#### 5.3.1. The OECD "Future of Education and Skills 2030" project

The current world we live in offers a variety of complex issues and difficult challenges. These challenges are a mere example of what the future is holding for us. We wonder how to prepare today's learners to be ready for these complexities that we are not yet aware of, and how to handle situations that we cannot yet imagine.

The OECD "Future of Education and Skills 2030" project was launched in 2016 for the purpose of supporting countries to prepare their education systems for the future, and develop a common language of teaching and learning. (OECD, 2019)

The project's main focus is split into two main phases: (OECD, 2019)

- The first phase (2015 - 2018), focused on curriculum redesign,

where it identifies what kinds of competencies (knowledge, skills, attitudes, and values) today's learners need to develop so that they can shape the world for a better future. It also included developing a conceptual framework for learning 2030.

- The second phase (2019 and beyond), focused on how we can implement this curriculum effectively, and where these competencies can take place. It also included creating a conceptual framework for teaching 2030.

The project focuses mainly on secondary education as an initial phase but it also provides the possibility of applying the project principles to all levels of education whether it's formal, informal, or contribute to the concept of lifelong learning. (OECD, 2019) This kind of framework can act as a common ground and a shared language between different stakeholders at the local and global levels, which stimulates and eases the ways of communication, comparison, and cooperation among different practices and systems.

Education is considered a main key for societal development, although it creates a great gap between the skills that learners acquire from their educational journey and the skills required for their future careers. The educational system should combine both the educational institutions and professional fields of practice in the learning journey, and allow the overlap between them. This will contribute to the self-development of every learner for whatever career he is seeking. It will also be beneficial to people whose ambitions are more academic than practical. A teacher with practical experience is always preferable to a theoretical one. He is having a greater chance of being more successful and beneficial to his students, as he elaborates on the different aspects of what he is teaching and shows its relevance to real-life applications.

The Future of education and Skills project promotes collaborations and partnerships between the different educational platforms. (OECD, 2019) It is opening the doors for creating a network of interactions between all kinds of entities and all educational platforms, providing a more inclusive learning experience. This will help learners understand the required competencies to be acquired in relevance to their career goals and real-world needs.

The creation of this series of interconnected collaborations will create a dynamic curriculum and recognize the differences between individual learners in their abilities, talents, learning pace, interests, attitudes, values, as well as their previous knowledge and skills. This dynamism will offer various learning narratives and a non-linear progression, rather than the traditional and standardized one.

As a result, the learning experience will be more flexible and personalized, and this may become the "new normal" (OECD, 2019) of future educational systems. It will also give great opportunities for all future learners of all ages to utilize their full potential, develop all the time, and participate in shaping a better future and a healthier well-being.

### 5.3.2. OECD Learning Framework 2030 "Learning Compass 2030"

The "OECD Learning Framework 2030" is a product of collaborative work from the "OECD Future of Education and Skills 2030" project stakeholders. After building on the "DeSeCo" project definitions, the learning framework is another layer within the "OECD Future of Education and Skills 2030" project that helps to set a holistic vision for the future of learning. (OECD, 2019)

The learning framework 2030 acts as a tool that offers a broad vision of the different types of unmeasurable competencies that learners need to thrive in 2030 and the years after. It provides an open framework that can be refined over time by interested parties. It supports policymakers through its relevance to real curriculum design issues. This realistic relevance makes it flexible enough to be easily utilized in all local contexts. (OECD, 2019)

The Learning framework is using the "Learning Compass" as a metaphor. This metaphor was adopted as it provides a more expressive and direct meaning to the purpose of the framework. (OECD, 2019) The "Learning Compass 2030" is clearly marking the words of Andreas Schleicher about education. It highlights the important need for students to be independent and develop the necessary competencies, so they can easily navigate on their own through complex situations and unfamiliar contexts, rather than waiting to receive fixed instructions and certain directions from their teachers.

The learning compass indicates core foundations, knowledge, skills, attitudes, values, and transformative competencies, that are necessary for individual learners to utilize their full potential and become responsible members of a healthier society. (OECD, 2019)

**The OECD Learning Compass 2030 is composed of seven main elements: (OECD, 2019)**

#### 1. Core foundations

For a learner to independently navigate through the world's complexities and realize his full potential, he needs to have a solid core foundation. These core foundations are defined as the main skills, attitudes, knowledge, and values that are needed for further learning. They also act as a base for developing student agency and transformative competencies. (OECD, 2019)

#### 2. Transformative competencies

The core foundations provided a solid base for learners to build on. Transformative competencies are a result of a process where every learner utilizes these main attitudes, values, skills, and knowledge and transforms them into effective tools that can reflect his own perspective, and help shape the world while creating a positive impact. These transformative competencies can vary from creating new values to taking responsibility and resolving conflicts, tensions, and dilemmas. (OECD, 2019)

### **3. Student agency/ co-agency**

The agency is considered as the ability to be independent and responsible for making decisions and taking actions that can create a positive change. Student agency is a learner's capacity to set his goals, develop his skills, reflect positively, and shape the world for the better. It is being responsibly in control of his choices, rather than blindly accepting others' instructions and following their orders. (OECD, 2019)

However, student agency does not mean student autonomy or disobedience. It rather urges being able to make rational choices and decisions that suit one's goals and interests in a responsible and positive way.

The agency is mostly learned and exercised in social contexts. It is developed together with co-agency through a series of interactions and collaborations with peers, teachers, families, and different members of the community. (OECD, 2019) This is reflected in the improvement of the learning outcome and the social and overall well-being.

### **4. Knowledge**

Knowledge is one of the main core foundation elements of the OECD Learning Compass 2030. It includes both theoretical and practical aspects, where theoretical concepts and ideas are practically understood through performing certain tasks. (OECD, 2019)

According to the Education and Skills project, knowledge consists of four different types: disciplinary (knowledge of certain curriculum subject), interdisciplinary (knowledge of a wide range of perspectives within combined subject areas), epistemic (scientific knowledge, or knowledge of causes), and procedural (exercised or performed knowledge). (OECD, 2019)

### **5. Skills**

Another element of the learning compass core foundations is Skills. Skills are defined as the ability of an individual learner to responsibly utilize his knowledge in achieving a certain goal.

The OECD Learning Compass 2030 recognizes skills as three different types: cognitive and metacognitive, social and emotional, and practical and physical. (OECD, 2019)

### **6. Attitudes & Values**

Attitudes and values are the other two elements forming the core foundations of the OECD Learning Compass 2030. They refer to one's core beliefs and moral standards, which he relies on to build his judgments, make his decisions, and take his actions. (OECD, 2019)

In order to develop a common ground of shared values and principles for the whole community, we need to rebuild societal and institutional trust. This will provide more just and sustainable economic growth within a trusting and healthier society. (OECD, 2019)

### **7. Anticipation-Action-Reflection Competency Development Cycle**

The Anticipation-Action-Reflection (AAR) cycle is a learning process cycle that supports learners to positively direct their thinking and responsible actions toward their overall well-being. (OECD, 2019)

Anticipation is the first phase of the competency development cycle, in which learners are considering the possible impact of their actions in the future. Actions act as the second phase of the cycle, where learners are willing to make responsible choices that are focused on the improvement of the overall life conditions for all. The last phase of the cycle is identified as the reflection phase. This is where learners try to learn from past experiences, identify what could have been better, and enhance their thinking process. This leads to better actions that will reflect on the total societal and environmental well-being. (OECD, 2019)

Through this repetitive cycle of planning, experimentation, and reflection, learners will broaden their perception and deepen their understanding. The AAR cycle is a strong tool that can support individuals in their learning process and personal growth. It acts as a driving force for the development of transformative competencies, where learners differ from one another in their abilities to utilize their core foundations in more adaptive and reflective actions.

In conclusion, the seven elements of the OECD Learning Compass 2030 provide a solid base that is elaborative and essential for building a generation that can shape a better future and be fully equipped for all upcoming challenges.

For all of these core foundations to be applied we need to build a homogeneous environment that enables them to cooperate, communicate, interact, and share the process. Learning platforms should be inclusive, interactive, easily accessed, and spread out. There should be an overlapping between the different fields, systems, environments, people, ages, and cultures. The practicality of learning should be assured in order to achieve these values.

The OECD Future of learning & skills 2030 project along with the Learning Compass 2030 elements, places a great emphasis on practical understanding and skills and encourages for building of a shared platform of knowledge, attitudes, and skills where co-agency, self-development, and societal progress can take place.

For these reasons, reducing the gap between learning and practice became essential, opening the different environments to become public learning arenas is fundamental, and transforming our cities

into learning ones becomes an obligation.

## 6. Interaction as the Main Essence of Learning and Self-Development (Interaction as a Common Ground)

Interaction is the essence of the learning process and a focal point that links all future educational concepts. When we delve into the definition of each concept, we find that Interaction is what defines them. By providing interaction opportunities in our environments, we can create learning settings that are effective, engaging, and inclusive.

### 6.1. Lifelong Learning

Lifelong learning is a concept that calls for providing learning opportunities for everyone all the time. It enables the ease of access to an open, interactive, and inclusive environment for all. It is about creating a homogenous atmosphere between different sectors of life and allowing the flexibility of transition between professional practice and education. (Ra, Jagannathan, & Maclean, 2002)

Lifelong learning also encompasses the different learning types formal, informal, and self-directed learning. This gives all individuals the possibility to have a limitless and personalized learning experience throughout their whole life span while ensuring the health and wellbeing of their mental and physical state. (Ra, Jagannathan, & Maclean, 2002)

It is goal number 4 in the “2030 Agenda for Sustainable Development” and a main factor that impacts all the 17 SDG goals, which highlights its future necessity. Lifelong learning acts as a broad perspective, in which it widens the spectrum of possibilities and interactions by connecting and integrating the learning process with all fields

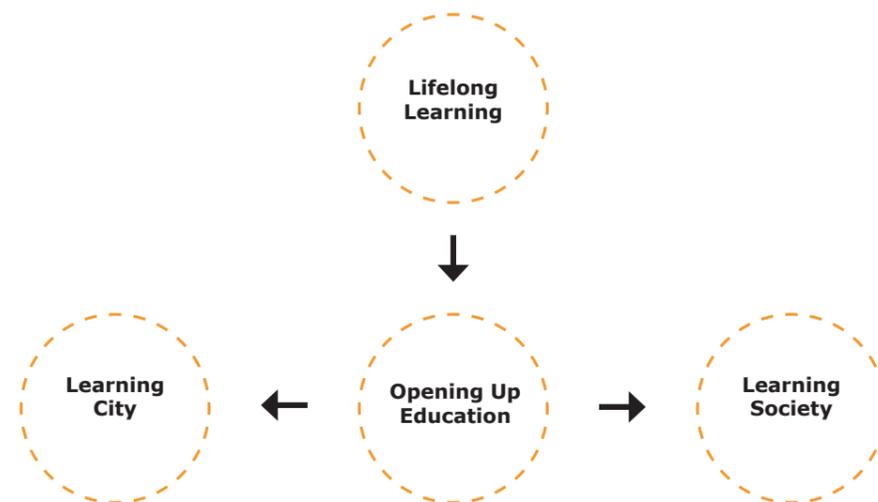


Fig.10. Lifelong Learning

of life. (Ra, Jagannathan, & Maclean, 2002) It becomes illogical to separate them in order to have a complete, rational, and actual learning experience. This idea of learning endlessly helps to create an inclusive environment that centers around interaction and paves the way for the core essence of learning and self-development to take place.

### 6.2. Learning City

Learning cities are the urban environments and main platforms that adopt the concept of lifelong learning and make it available for all. The United Nations Educational, Scientific, and Culture Organization (UNESCO), with its “Global Network of Learning Cities” (GNLC) – an international policy-based network – and the “UNESCO Institute for Lifelong Learning” (UIL) – a non-profit international institute that supports lifelong learning and it is one of UNESCO’s eight educational institutes – all have committed their efforts to lifelong learning within a network of international cities members. The GNLC operates through a framework that aims at revitalizing learning in societies of the member cities, leaving no one behind especially the most vulnerable. (Ra, Jagannathan, & Maclean, 2002)

Learning Cities are platforms where various series of interactions, and limitless learning possibilities and opportunities can take place. These learning platforms enable the conditions for homogeneous connections between different stakeholders, sectors, and community members to provide inclusive learning at all life stages and development phases. They work on creating networks between the professional fields of practice and education and encourage workplace learning. (Ra, Jagannathan, & Maclean, 2002)

This kind of city urges for the revival of learning in families and community and provide equity in the access to educational opportunities, regardless of individuals’ backgrounds, or their social and economic status. It highlights the role of technology in easing the extension of connectivity and removing many obstacles and boundaries.

In learning cities, education, and learning is no longer restricted to schools or any kind of traditional educational institutions, but any space or venue can be a learning place, it can be an indoor space or an outdoor area, it can be a home, a museum, a park, a bus-stop or even a workplace.

A learning city is one where learning is at the heart of its planning and development. (Ra, Jagannathan, & Maclean, 2002) A city that prioritizes and integrates education in its urban and architectural spaces, as well as into all aspects of city life.

### 6.2.1. Educational Landscapes

Educational Landscapes are integral components of a learning city. They act as a main tool that is mostly used by planning and design professions to provide educational opportunities in any space typology (i.e.; school, home, workspace, museum, hospital, bus stop, supermarket) whether private or public and at the different levels of scale (i.e.; building, plot, block, neighborhood, district, entire city, region). (Million, & Heinrich, 2017)

In other words, Educational landscapes are a network of actors in the field of education that cooperate to professionally define and design various local spaces of different types, levels, and functions, where they share a common understanding of educational purposes and provide long-term interactive learning opportunities (formal and informal) that are accessible and responsive to all learners needs.

Educational landscapes are flexible and adaptable networks that can improve the quality of education and have a profound impact on overall development, where they provide different series of interactions between education and other sectors of the community. According to Dr. Klaus Berse – a German educationalist who is famous for his work on Educational Landscapes – in his book “Educational Landscapes: A Theoretical Approach” (2009), he identified four types of educational landscapes: (Million, & Heinrich, 2017)

1. Cooperation between youth welfare service and school: This helps to provide support for learners to develop their social and physical abilities within their learning journey.
2. School and school development design: This type focuses on the improvement of schools, in the sense of being more responsive to learner needs.
3. Lifelong learning, further training, economy: This one is preparing all learners with the needed skills and knowledge to personal growth and effective impact on sustainable development.
4. Social space as educational space: This is considered the most important type of educational landscape. The main purpose of this type is to provide learning opportunities in various settings. It exploits social spaces as platforms for learning, and it includes shaping the socio-spatial living conditions as a foundation base for learning processes. (Million, & Heinrich, 2017) This will reflect on putting education at the center of urban development and planning, which will ensure the successful outcome of a learning city.

All these types of educational landscapes will create collaborative and interactive networks of learning. It will also highlight the points of strength and weaknesses so that it can help in identifying the best approach for educational development.

Overall, educational landscapes are flexible networks that can be physical or virtual (i.e.; Google Expedition app and The MinecraftEdu Platform), which offer various educational opportunities and

learning ways, including collaborative and interactive activities that utilize the natural environment and technology as learning resources. Transforming the various environments into educational landscapes will reflect on creating a learning community that is socially connected and collectively developing.

#### 6.2.1.1. Socio-spatial Educational Landscapes

The implementation of Socio-spatial Educational Landscapes is essential for their broad profound impact on the overall living conditions. The socio-spatial living conditions are being shaped to provide a foundation base for educational processes. It uses social spaces within a community as educational platforms that provide holistic and interactive learning experiences. (Million, & Heinrich, 2017)

The socio-spatial living conditions are considered the wide spectrum of social and spatial factors that affect the quality of life and well-being of individuals or group members in a community. These factors can encompass the surrounding environments they live in (i.e.; neighborhood public spaces, their houses, etc.), access to educational opportunities, availability of employment vacancies, and interactive social networks.

#### **There are four main elements that describe Socio-spatial Educational Landscapes in practice:**

- Diversity of participating institutions: The first element includes the variety of actors incorporated in the creation and development process, where is an element that is also included in other types of educational landscapes. These actors can vary from educational institutions (i.e.; Childhood educational facilities, all-day schools) to different organizations in all disciplines (Research laboratories, government facilities, professional practice entities), which they are equally cooperating to provide a holistic learning journey. (Million, & Heinrich, 2017)
- Various forms of organizational cooperation: The second element integrates the various possible forms of cooperation between the different organizations, where they construct a working structure that enables long-term collaborations. These networks of cooperation are usually non-formal ones that mainly depend on voluntary participation. (Million, & Heinrich, 2017)
- Integration of educational and urban planning aspects in the overall concept: (Million, & Heinrich, 2017) The third one is characterized by linking both the pedagogical and spatial aspects in the whole process of developing socio-spatial educational landscapes. It focuses on creating learning environments that support physical development and personal growth. There are real applications as the urban development concept called “The Campus”, which elaborates the features and benefits of this type of socio-spatial educational landscape. (Million, & Heinrich, 2017)
- Socio-spatial relations: The final element includes the physical space where socio-spatial educational landscapes will be conceived. It encompasses the broad scope of possible forms and

characteristics of physical spaces which can vary from the creation of new green and open spaces, to extending the boundaries of existing architectures and connecting them to new ones, and many other possibilities that will create a network of spatial connections. (Million, & Heinrich, 2017)

Socio-spatial educational landscapes are characterized by unique features that distinguish them from other types of educational landscapes, where most of the other types function as institutional educational networks. (Million, & Heinrich, 2017)

This distinctive type of educational landscape is a result of a collaborative design process, performed by educators, architects, and urban and landscape planners. All of these actors shared a common understanding of issues, purposes, and goals, regardless of their different motivations, while directing special attention to deprived neighborhoods. (Million, & Heinrich, 2017)

Socio-spatial educational landscapes adopt a holistic approach to solving complex problems through the inclusion of various disciplines and the integration of different departments in the development process of local education in deprived neighborhoods. This will create multiple synergies that will directly provide a more effective outcome of the whole process. These integrated processes of development will rationalize and identify the know-how of using existing resources and tools while constructing different policies and programs (i.e.; the Social City program) that help effectively achieve the overall pursued goals.

### **6.3. Learning Society**

A Learning society can be defined in many ways according to different authors, educators, philosophers, and organizations. Its description can vary in the lingual expression, but they all lead to the same set of goals and characteristics.

Organizations such as UNESCO and OECD, are advocating the learning society concept, which they define as “a new educational philosophy that positions education as the key to a nation’s economic development and holds that education should extend beyond formal learning (based in traditional educational institutions – schools, universities, etc.) into informal learning centers to support a knowledge economy (known as a “world education culture”)”. (Wikipedia, 2022) The outcome of this view is that a learning society’s main aim is to contribute to the economic growth of a country. (Tien, 2013)

A Learning society is also defined by others such as the famous American educational philosopher Robert Hutchins in his book entitled “The Learning Society”, where he envisioned the learning society as one that is characterized by “the freedom of its citizens to cultivate their intelligence through liberal education”. (Tien, 2013)

By going through the various definitions and interpretations, we can

conclude and elaborate on the common characteristics and goals they share for describing a learning society.

A learning society is one that its members are developing continuously in an environment enshrined to support and adopt the concept of lifelong learning in all its aspects. It is a society where its citizens are provided with limitless opportunities for knowledge sharing and acquisition, and the transmission of experience and expertise among the different ages of its members within an effective network of learning platforms. It is a community where all its sectors are finding the required conditions that help create various interactions and effective local partnerships and between all its members.

Individual Citizens of a learning society are characterized by certain key features. They are always seeking knowledge and learning throughout their whole life journey, and they are considered providers of education and learning in an unlimited interactive process of mutual benefit among all society members.

A learning society is surely considered a means for any nation’s sustainable economic development and societal cohesion. It can be an effective solution for all, regardless of the different geographical, regional, political, and economic conditions.

### **6.4. Opening up education**

Opening-up education is an approach that can allow all different space typologies to provide learning opportunities for all community members. This will help city spaces to become learning venues and pave the way for lifelong learning concepts to be adopted by all society members.

Opening-up education in its essence means the removal of all the barriers obstructing the ease of access to learning and education for all. (Dos Santos, Punie, & Muñoz, 2016) It includes opening the doors for all ages to share knowledge and experience everywhere and all the time. It provides the interactive communication of different sectors allowing educational opportunities and sharing of expertise.

Through the use of the latest digital technologies, the spread of learning arenas, the openness of educational resources, the interaction of all entities for educational purposes, and the integration of all ages together in the learning process; (Dos Santos, Punie, & Muñoz, 2016) Opening up Education: A Support Framework for Higher Education Institutions.) This will help create a series of effective collaborations between individuals-institutions, individuals-individuals, institutions-institutions. It will also provide a strong connection between formal and informal learning and enables lifelong learning opportunity for all.

This powerful impact will influence the ways of assessment and evaluation, where skills will be more recognized and appreciated

than certificates. It will also reflect on seeking innovation and creativity in the new methods of teaching and learning while giving the opportunity for all learners to develop and grow in an affordable and flexible way.

In this section of the paper, we elaborated on the general main components forming an interactive learning process and an inclusive educational journey. We highlighted the interactive essence of all these key elements and the concept of “Lifelong Learning” as the core foundation for obtaining a learning city and a learning society simultaneously through the opening-up of education.

## 7. Developing For Interactive Learning environments (Educational Interaction Genres)

As described in the previous sections of this paper, interaction is the core of the learning process and a healthier educational environment. It is important to delve into its many forms so that we can better understand each one’s influence on the shaping of our learning environments. All of these forms of interaction should offer the flexibility of transition from one to the other and provide a certain harmony and homogeneity as much as possible.

Our daily experiences should include the different forms of interactions, as they have a critical role in our sensorial development, particularly in early childhood. We activate our senses, whether in groups or all together through the different engagements and experiences that allow us to perceive and understand our world, and develop our cognitive and learning abilities.

All learning environments should be interactive platforms that pay excessive attention to the various details that children can relate to with their minds and bodies. They should maintain the balance between safety and challenge to allow them to explore more and utilize their full potential of skills and talents.

### 7.1. Interaction with People

#### 7.1.1. Social Interaction

John Dewey once said that **“Learning is primarily a social activity”** (Hurst, Wallace, & Nixon, 2013); This statement highlights the powerful impact of social interaction on providing an effective learning process and ensuring the well-being of all learners. However, this philosophy and perception of learning is not always adopted in our educational platforms. Most learning environments, teachers, schools, educational institutions, and educational systems do not consider the necessity of its adoption as a main tool for delivering our learning experience.

Social interaction has a fundamental role in the holistic development of all learners encompassing their physical, mental, and emotional abilities. They can form different relationships and engage in meaningful discussions that can boost their confidence, critical

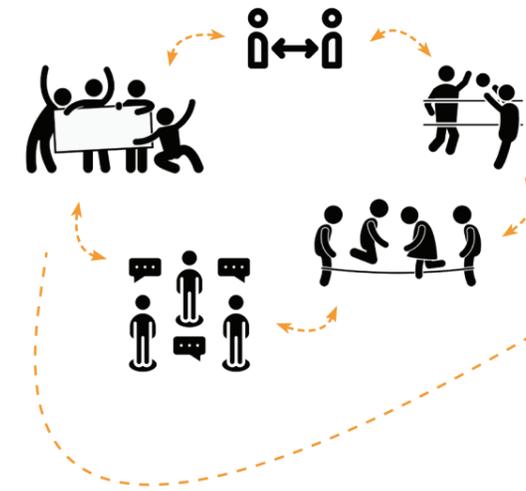


Fig.11. Interaction with People

thinking, and observational skills. They can feel connected to the community, and create a sense of belonging while avoiding negative feelings of loneliness and isolation. (Holt, 1967)

Social interactions and communications can help children and learners to develop their cognitive functions, where they can solve complex problems using creative and innovative solutions, and broaden their perception and understanding through their exposure to different challenges, ideas, experiences, and cultures. Overall, Social interaction is essential to shaping a meaningful and fulfilling learning experience and a successful educational journey.

#### 7.1.2. Intergenerational Learning

In the current schooling system, learners are always divided into different groups of the same age. They are not given the opportunity to learn within groups of different ages, where they can experience their learning journey at other levels. In the concept of “Intergenerational learning”, people of all ages are learning together, interacting together, and developing in their own ways within the same context. It doesn’t matter whether they are children (0 - 12 years), adolescents (13 - 17 years), young adults (18 - 39 years), middle age adults (40 - 64 years), older adults (65 years and more). (Camargo, 2017)

Intergenerational learning is an educational approach that promotes the exchange of knowledge and sharing of experience among different age groups. It has a vital role in creating a dynamic learning environment, where mutual understanding and collective development is provided. This will allow various learning relationships between young learners and their peers, young and elders, or even elders and elders. This kind of atmosphere will

## INTERGENERATIONAL LEARNING

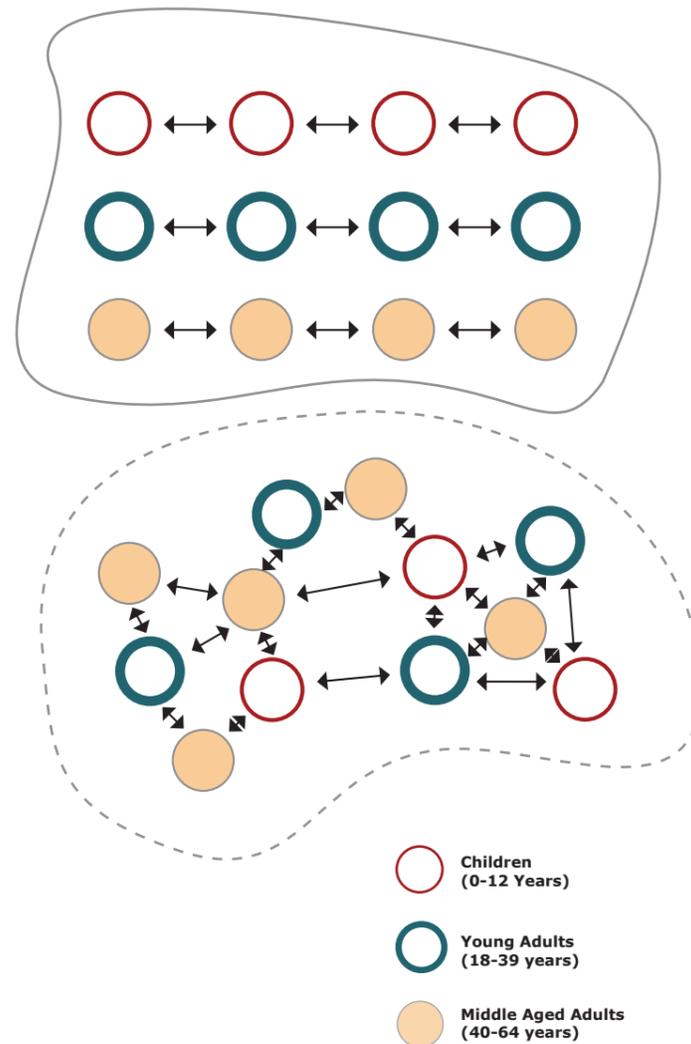


Fig.12. Intergenerational Learning

allow younger ages to gain valuable experiences and insights from the elderly, and at the same time provide the elders with a sense of fulfillment and purpose where they pass their wisdom and expertise to the younger generations of learners.

Intergenerational learning is a successful educational approach, where it strengthens the sense of community, promotes lifelong learning, and provides a collaborative learning journey across all ages.

## 7.2. Interaction with Space

The interaction with space is meant to diversify the environments and spaces where learning can take place. It means enabling different contexts to host and provide learning activities and opportunities. It should not only be enclosed to schools or any traditional educational institution but include all various platforms and develop them into learning ones.

“Learning should be everywhere”. A statement to be highlighted as it expresses the true meaning of learning and acknowledgment, which is diverse and spread. Learning should take place in all kinds of spaces with all its definitions and descriptions. Places of learning should be abundant and interactive, they can be physical or virtual, closed or opened, private or public, they can be a bus stop, a roof in a building, a small garden in a house, a workplace, a museum, a park, or even a street.

A Space should provide the opportunity for learning especially where families usually go. It should give the flexibility of multifunction and knowledge acquisition for all ages by developing and transforming all environments into engaging and interactive learning venues.

### 7.2.1. Nature & Outdoor Environment

Outdoor learning environments have many benefits and a great influence on human well-being and development; They strengthen the human-nature relationship which in turn reflects on improving their critical skills and learning outcomes.

The presence of children in natural & outdoor environments encourages physical activity and largely contributes to the physical and mental health of children, which in turn affect positively the development of their motor skills, (Acar, 2013) as well as their concentration and memory skills. It also gives the opportunity to



Fig.13. Interaction with Space.

(Nature & Outdoor Environments/ Architecture/ Public Spaces)

experience the body's senses while exploring the surroundings and participating in various interactive activities, which in the end results in a better outcome of learning and self-development.

In addition, we can highlight in more detail the benefits of spending time in nature and outdoors, especially for young children. For example, being exposed to sunlight provides the child with vitamin D which is essential for healthy bones and an immunity system. Physical movement and activities (i.e.; walking, cycling, hiking, running, climbing, etc..) improve stamina and boost cardiac and vascular health. Exposure to nature can reduce anxiety and stress and give a sense of relaxation and comfort, which reflects on overall mental well-being. Experiencing other senses through the different sights (i.e.; greens, sea color, colored flowers), sounds (i.e.; birds, animals, water, wind through tree leaves), and the different scents and odors (i.e.; flowers) of nature also contribute to a better psychological mood, stimulate a state of mindfulness and separate from daily-life pressures. (Park, & Riley, 2015)

Overall, the inclusion of nature as a main arena hosting learning opportunities, will provide a generation with a sense of appreciation to the natural environment and care enough to protect the planet. It will contribute to various social interactions, which strengthen the connection and bonding among all members of society.

### 7.2.2. Public Spaces "Playful Learning Landscapes"

Urban Public spaces have an essential role in supporting the learning process, especially in communities that are not so resourceful and have a lack of ease of access to educational and learning platforms. (Hirsh-Pasek, & Hadani, 2019) They act as both an alternative interactive learning environment and an active communal space that can host different activities and social gatherings.

As a matter of fact, children are the main users of these spaces as they spend most of their time outside their classrooms and schools, so their needs should be considered as a priority when creating them. These environments should offer excitement and joy in all its forms, they should provide experimentation and motivation, and this could be achieved if it all becomes centered around the concept of learning through play, which turns at the end to what we can call "Playful Learning Landscapes". (Hirsh-Pasek, & Hadani, 2019)

These learning settings offer a variety of possibilities, where they can be an extension for schools and/or an easily accessed and open substitute for educational institutions. (Deinet, 2017) They can host all of these possibilities and more, only if equipped with all the needed facilities and characteristics for a healthier and fulfilling learning platform.

### 7.2.3. Architecture, Materials & Objects

Architecture plays a significant role in shaping our environments and

physical spaces. It influences our emotions, social communications, and personal growth. We perceive the world through the various architectural creations of physical spaces. We explore the built environment in its different forms, features, functions, and scales, which shape our behaviors and interactions.

Architecture helps people understand geometry, scales, materials, textures, elements, aesthetics, spaces, and boundaries. It helps them explore, interact, experience, and connect. It has a profound impact on all aspects of life and the overall well-being of people.

Our built environment has the ability to identify and control our attitudes and actions. This environment varies in its forms, from public squares to parks, buildings, and interior spaces. Each includes different kinds of features and functions that define the ways people will experience and use their environment. The functions and needs that the built environment facilitates will determine the kind of activities and interactions taking place within its boundaries. The total experience offered by physical architecture spaces should be holistic, as it includes physical design, behavioral norms, and currently, technological tools. (Skirvin, & Berman, 1973)

The designed environments are defined according to the integration of various interactive physical systems that shape its final form. These interactive elements should be carefully decided in the architecture design process, as they have a powerful impact on human behavior and the affiliated consequences. (Skirvin, & Berman, 1973)

### 7.3. Interaction with Technology

In light of the current events, the advancement of technology, and critical life events such as the pandemic, we come to the fact that technology plays an important role in the future of education and learning. This latest advancement and revolution have not yet been adopted in the educational sector.

When it comes to education and teaching, especially in the times of the pandemic, we can find many online platforms that ease the ways of communication whether inside or outside the classrooms.

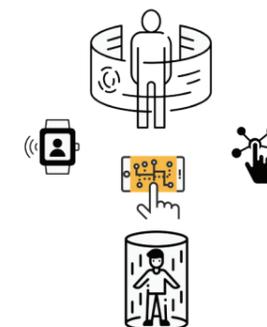


Fig.14. Interaction with Technology.

These digital platforms also facilitate many resources whether opened or closed which gives the chance to students and learners for a personalized learning experience through digital clouds.

Although these kinds of learning means offer great help, they are not yet fully up-to-date with the latest technological advancements (i.e.; AR, VR, MR). They are not utilizing the full potential of technological progress, which if adopted will have a radical impact on the overall learning experience.

Outdoor environments as well can enrich their technological means and infrastructure to benefit learners of all ages with the ease of access to resources, platforms, and digital mediums that can enhance their learning experience at all times, and provide them with the needed instruments at their doorstep that can be of extreme advantages at critical times of crisis as that of covid-19. (Midgley, 2014)

Technological integration within our different environments and learning platforms is currently crucial and fundamental to future-proofing the educational journey for the upcoming generations.

#### 7.4. Interaction with Professional Fields of Practice

It is commonly known the presence a great gap between what we learn in schools and what the real professional life needs. Students and learners are always having the fear of facing what is after, they always feel the lack of connection between their curriculum and subjects and the necessary skills and knowledge needed for practical life.

In order to solve this serious matter, we need to allow the interaction between both fields from the very beginning of the learning process, we can remove this separation by bringing education into the workplace or bringing the professional fields of practice into learning environments as well. Students don't need to worry anymore because they are already studying practical knowledge and acquiring the real-life needed skills in its place.

In this way, we can save a lot of effort, time, and hassle, as we are bringing everything together and providing ultimate flexibility and homogeneity between different learning environments. Also, by adopting this approach, we are giving the child the chance to discover more about his passion and what he wants to become, and giving him maximum exposure to different fields of practice and equal opportunities to access all of them.

On the other hand, learners can have more than one source of inspiration and influence from their early childhood ages, they

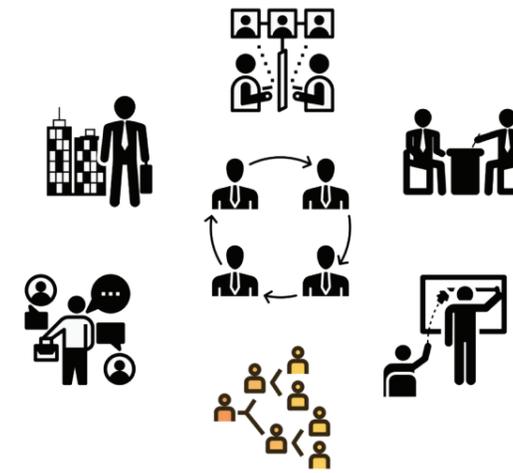


Fig.15. Interaction with Professional Fields of Practice.

are not only restricted to their parents' jobs or to what the school teaches them about the best future careers. They now have the real freedom of choice of who they will be, as it all becomes fairly exposed.

**In conclusion,** after the elaboration of the OECD vision for educational development and the identification of the different concepts of learning and the key factors of a holistic learning process. It has been proved that interaction with its different forms and types is the essence of the learning experience. Our physical environments should provide the needed tools, conditions, and exposures to enable useful communications with the surroundings including social and physical aspects, and provide an overall effective learning outcome.

## **8. What is an “Interactive Learning City” (ILC)**

According to the research carried out for this paper, the notion of “Interactive Learning Cities” (ILCs) is not yet defined in any scientific reference. However, this paper is trying to provide a first preliminary definition for ILCs in relevance to the process carried out in its first two chapters to conclude a clear understanding of ILCs by defining them. The previous sections of the paper until this point have covered the different problems and issues facing traditional educational forms, methods, environments, and tools, defined the main features and characteristics of a successful learning environment and pedagogy identified the different ingredients and characteristics that should be included in an efficient learning space, and finally demonstrated the various forms of interaction while proving that it is a fundamental component of an effective learning environment and a holistic learning experience.

The concept of Interactive Learning Cities is an evolution to that of Learning cities but with more emphasis on interaction, playful & interactive approaches, and innovative and technological means to enhance the learning experience and the educational journey for all, especially at early childhood ages. An interactive learning city (ILC) takes the learning city concept a step forward with a great emphasis on interaction in all aspects of life.

### **In other words, we can define an ILC as:**

“A development of a learning city, in which learning and lifelong learning opportunities are provided from the very beginning of a child’s life journey using various forms of interactive and playful methods through a collaborative approach across the different environments, platforms, spaces, sectors, disciplines, ages, entities, backgrounds and stakeholders in a just and equitable manner. The learner’s educational experience in an ILC is not bound to a certain platform of an educational institution, but rather on the move. It is an outcome of a series of exposures and interactions with all aspects and disciplines of life in its authentic form and within its original architectural or urban boundaries, using innovative, technological, playful, and interactive means for a holistic and effective learning experience”.

The following chapter of case studies will identify the know-how of transforming our cities into ILCs by demonstrating the different forms and narratives for a more effective and inclusive learning journey. In the fourth and final part of the thesis, we will conclude the different components of an ILC, identify its goals and benefits from different aspects, and provide a preliminary framework of guidelines, elaborations, recommendations, and further research suggestions to continue the journey of practically implementing the concept of ILCs in the near future all over the world.

## **Part III**

**The Know-How ..  
Case Studies**

## The Know-How .. Case Studies

### 9. Introduction

The main focus of this chapter is to identify the know-how of transforming our cities into Interactive Learning Cities (ILCs). It draws a roadmap towards the transformation and development of the different types and scales of our urban landscapes into educational environments, where learning is embedded within the very fabric and infrastructure of the city. It achieves that by showcasing real-world applications for interactive educational policies, strategies, programs, platforms, elements, functions, tools, and spaces, for which the total outcome obtained will help provide a city-wide learning ecosystem and a holistic approach toward shaping and implementing an Interactive Learning City (ILC).

The framework of this chapter starts with the case study of the "Leipzig Charter" policies and strategies that are applied at the city scale, as they are key tools for transformation. Then it elaborates on an urban development program of the charter - the "Social City Program" - that implements these policies at the local level. It goes on to the neighborhood level where the residents can learn all together through their neighborhood facilities of "Campus Rütli Berlin" which is implemented through the "Social City Program". Then it continues with alternative types of education and schooling that are implemented at the building level, such as that of Elon Musk Schools (Ad Astra School - Astra Nova School) and Max Ventilla's "AltSchool". The following case study of - "Megawra - BEC" in Cairo, Egypt - discusses the possibility of how professional practice entities can provide educational opportunities through their working fields at the architecture and urban levels. Then, it highlights the intriguing potential of our public environments whether outdoor or indoor, virtual or physical, in offering educational environments and platforms, such as that of "Cit  des Sciences et de l'Industrie" in Paris. The case study of the bus stop pilot project of the "Urban Thinkscape" initiative in the USA, goes on to elaborate on how any function can be utilized and transformed into an interactive and learning one.

Furthermore, it explains how we can manage different technological tools and virtual mediums to provide an interactive learning experience that is not bound to the constraints of space and time. This is clearly demonstrated in the case studies of the "Google Expeditions Application", and "The Minecraft Edu Platform".

After all these case studies, it ends with a final one that explores the "UNESCO Learning City of Belfast" in North Ireland. This one elaborates on the different elements and key features that helped form a learning city and tries relating to the previous case studies mentioned in the paper in order to reach a holistic narrative and framework of how to transform regular cities into learning ones,

and how to improve the existing learning cities into better ones. This can be achieved through the integration of all the learning tools and elements we explored within the city fabric and infrastructure while utilizing and developing all its urban landscapes, and buildings and operating educational and noneducational institutions into hubs for interactive learning and inclusive progress.

In these real-world examples, it is clearly shown that the process of development and change can be bottom-up top-down, or both at the same time where they can meet and ensure a faster transformation and progress. A top-down Governmental Authority regulating policies for city programs and urban transformation. Bottom-up refers to examples such as the pioneer Elon Musk who is trying to create various innovative ways that help bring forward the education and learning processor, Max Ventilla with his "Alt School", or Megawra BEC with its "Athar Lina" initiative, and many others. These kinds of innovative approaches and creative initiatives can have an impact and act as an inspiration to other schools educational systems, and professional learning platforms where it's a call aiming for positive change.

Although all these case studies are at different levels of scale and have different motivations and methodologies of work, they share a common purpose to achieve. These different examples are being elaborated to highlight common features at different scales, where we can relate them to each other and organize a logical sequence for the methodology of application. These common features of relevance would include scale whether macro or micro (regional - country - state or province - urban area - city - neighborhood), space (physical - virtual, public-private, etc ..), function type (policy, program, public service, professional practice, educational, etc ..), actors (educationalist, scientist, cooperative group of different sectors, government), approach (bottom up - top down), and aspects (social, environmental, economical, historical, educational, etc ..).

By means of this methodology, we will obtain a holistic approach to the know-how of transforming our cities into learning cities, and pursue the development of our learning platforms into an environment that prioritizes interaction, flexibility, and inclusivity, while providing lifelong learning opportunities all the time and for everyone across the city.

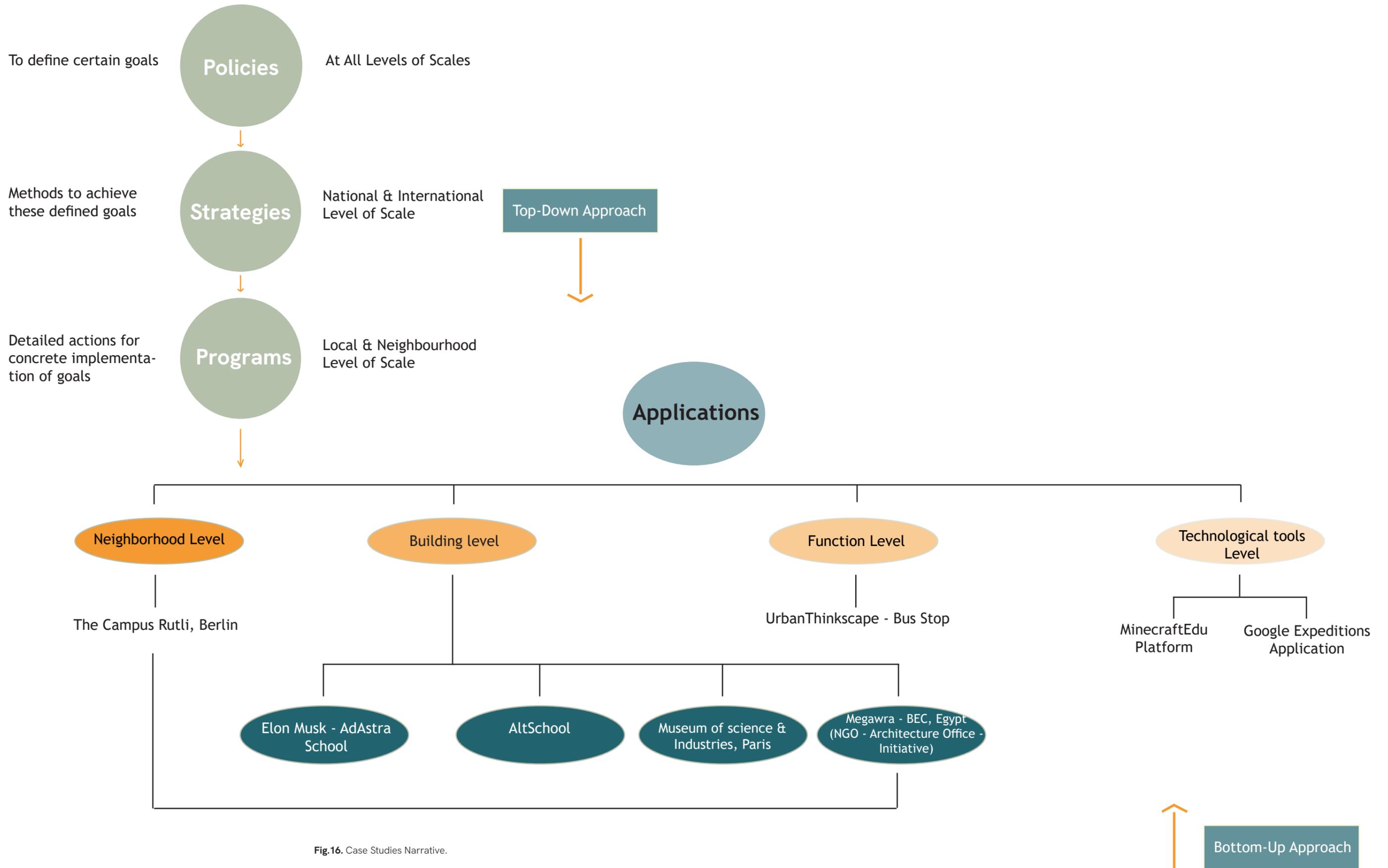


Fig.16. Case Studies Narrative.

## 10. Policies, Strategies & Programs

Policies, strategies, and programs are the main tools of action that help achieve certain goals for the overall development. Policies help set the main broad intentions and guidelines for decision-making at all levels of development. Strategies act as the method of achieving these goals, and they are mostly applied at the national and international levels. Programs are the more detailed approach, where they represent the detailed phase of plans and instructions for achieving the main goal, where it is typically used at the local and regional level.

This set of tools are overlapping in scale and application, where they are all used to address a wide range of issues, guide decisions, set goals and implement actions for the development plans at all levels.

### 10.1. LEIPZIG CHARTER on Sustainable European Cities

**Scale: Cities**

**Space: Physical Environment – Public Spaces**

**Function: Urban Development Policies**

**Actors: European Ministers for Urban Development**

**Approach: Top-down**

**Aspects: Inclusive (all aspects of life and development)**

#### 10.1.1. Brief

The “LEIPZIG CHARTER on Sustainable European Cities” is a document (EU 2007.De, 2007) of principles, objectives, and strategies that was issued in Leipzig Germany by the European ministers responsible for spatial planning and urban development in 2007. (European Parliament, 2008) It acts as a main reference and a common ground for urban development policies of EU countries at all levels. These policies are drawn from the broad perspective of the various historical, economic, social, and environmental backgrounds of European cities. (LEIPZIG CHARTER on Sustainable European Cities, 2007) The charter also encompasses various actors at different levels, where it is promoted by the European Union, implemented by governmental actors of cities, and supported by local businesses and active citizens of society.

#### 10.1.2. Making greater use of integrated urban development policy approaches

Integrated urban development policies are an essential approach of the Leipzig charter as described in the brief. It includes all aspects of development whether spatial, sectoral, or temporal. These aspects are all coordinated simultaneously and with equal weights. The spatial aspect includes the physical environment and infrastructures, while the sectoral includes all social, environmental, economic, or historical aspects; And the temporal aspect ensures the preparation of cities for the present and future challenges

through the development of long-term and short-term plans. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

The integrated urban development policy also involves all actors that can contribute to the successful implementation of policies and strategies of the charter for an inclusive and sustainable future of cities. This will create a network of partnerships at local and city-regional levels. It will encourage cooperation between different areas of scale such as urban and rural, and small – medium – and large towns and cities. It eliminates the isolation of cities and encourages the transformation to a more cohesive city-regional development process. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

This collaborative and collective process of development will ensure the equal coordination and distribution of the scarce public funds, resources, and investments on the different levels and areas, which will reflect on a well-balanced and just development for all urban areas of European cities.

The integrated urban development policy has identified some strategies of action for the effective application of its scope. These strategies include: (LEIPZIG CHARTER on Sustainable European Cities, 2007)

- **Creating and ensuring high-quality public spaces**

The quality of the physical living environment indicates the quality of life that citizens will experience. These physical environments include public spaces, urban man-made landscapes, and architecture. They are the base where different series of interactions can take place. These interactions occur between architecture, infrastructure planning, and urban planning to create attractive, functional, user-oriented, and well-designed urban spaces, infrastructures, and services. This will provide high-quality living environments in all European cities. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

- **Modernizing infrastructure networks and improving energy efficiency**

The adoption of the sustainability aspect in urban development is essential for improving the quality of life for city residents and for making cities more attractive as business locations. Sustainability and improvements can be applied in many areas of development. These areas include accessibility and affordability of urban transportation with coordinated links to the city-region transport networks and the different functions of urban areas. Energy and economic efficiency of operation and use of natural resources. Technical infrastructure – such as water supply and waste-water treatment. ICT adoption in all fields of services such as education, health, employment, and security. Low carbon methods of growth to mitigate severe climate challenges. The mixing in use of housing, employment, education, and other uses within urban neighborhoods. All these aspects

contribute effectively to a high-quality future urban living. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

- **Proactive innovation and educational policies**

Cities are platforms where knowledge is created and transferred. The knowledge and learning potential of a city depends on the quality of its educational system and educational institutions (pre-schools, schools, universities, research institutes), its opportunities for lifelong learning, the cooperative learning networks between all institutions and systems including education, training, businesses, cultural facilities, services, industries, and scientific organizations and facilities. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

Integrated urban development policy can help to improve these factors by providing suitable conditions to bring stakeholders together, support the creation of collaborative networks of learning, and promote social and intercultural dialogue. This will provide all citizens with equitable and just opportunities for learning and social participation and will contribute to the overall societal well-being.

**10.1.3. That special attention is paid to deprived neighborhoods within the context of the city as a whole. (EU 2007.De, 2007)**

Cities are facing a considerable number of challenges, such as high unemployment and social exclusion. The quality of the environment and services provided may have great differences within the same city. These challenges can increase over time and lead to the destabilization of cities and a lack of security. Due to this social distinction, a policy of social integration is needed. This can contribute to reducing inequalities and preventing social exclusion, which will be the best way to address these challenges and their negative consequences. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

A good way of achieving social cohesion and integration especially in deprived urban areas of the city is well-conceived social housing policies. (LEIPZIG CHARTER on Sustainable European Cities, 2007) These policies can be effective tools for providing healthy, suitable, and affordable housing, which will contribute to the overall positive outcome of more attractive and stable neighborhoods for both young and old people.

It is important to highlight the signs of decline in neighborhoods at early stages and take effective and immediate actions. This will help to overcome the waste of resources, reduce the expensive cost of acting in a late stage, and easily turn around these deprived neighborhoods. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

Governments have an important role in improving the life conditions of residents in deprived areas. They must offer holistic goals and incentives for a better future. The active involvement of residents

and all actors in the development process, and the creation of different dialogues among public representatives, citizens, and private entities is essential to identify problems and find the best solutions for each deprived urban area. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

- **Proactive education and training policies for children and young people (EU 2007.De, 2007)**

Children and young people are of crucial importance. They are the generations that will carry the destiny of the world's future. By improving their lives, we ensure a better contribution from their side to overcome future challenges and obstacles. Education and training must be supported by policies and strategies that improve its situation and direct its focus to meet the needs and goals of children and young people. This will provide a better quality of life in deprived neighborhoods and offer equal opportunities for learning and development for all. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

- **Promotion of efficient and affordable urban transport**

Deprived neighborhoods mostly lack efficient, well-connected, and affordable urban transportation. The provision of accessible and affordable public transport systems in these disadvantaged neighborhoods is evident. It will allow the residents of these neighborhoods to be exposed to other citizens, where they can interact, connect, and exchange experiences. This will reflect in more attractive neighborhoods that encourage communication, cooperation, and interaction. (LEIPZIG CHARTER on Sustainable European Cities, 2007)

**10.2. The New Leipzig Charter (NLC) “the transformative power of cities for the common good”**

The world is recently facing a huge amount of challenges in all aspects of life. These challenges vary from climatic risks to the scarcity of resources, the technological revolution that is drastically affecting all aspects of life, the pandemics, and many others that are rapidly transforming towns, cities, and societies throughout Europe. Thus, an updated version of the original document “The Leipzig Charter on Sustainable European Cities” from 2007 was needed.

“The New Leipzig Charter – the transformative power of cities for the common good” – (European Parliament, 2020) is a revised version that was adopted in November 2020. It offers integrated urban development policies and creates a legally non-binding framework that helps to realize the set of goals at the urban scale identified by European and global agreements. These agreements include the 2030 Agenda for Sustainable Development (especially goal number 11 of making cities safe, inclusive, resilient, and sustainable), the New Urban Agenda (vision for cities that are inclusive, safe, resilient, and sustainable), the Paris Agreement 2015 (Green gas emissions mitigation and global response to climate change – reduce global

temperature rise in this century below 2 degrees celsius), and the EU Green Deal in cities (Europe as a climate neutral continent in 2050). (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

The most important keywords used in the description of European cities from the new charter perspective are flexibility, interaction, creativity, solidarity, openness, high-quality, safe, vibrant, just, green, and productive. These keywords highlight the main features of future European cities to be adopted in the urban development strategies and actions.

The vision of European cities drawn in the new charter is based on three main dimensions, three spatial levels, and five key principles of good urban governance.

### 10.2.1. Three Dimensions of European Cities

The New Leipzig Charter states that the urban transformation of European cities relies on the integration of three main dimensions of sustainable development. These dimensions include the social, ecological, and economic aspects, by which addressing their relevant challenges will provide a higher quality of living for all. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **The just city**

Cities have the power to transform the lives of their citizens for the better. They can create a more just and equitable society for all; Thus, providing a just City. A just city is one that allows all its citizens to have equal access to opportunities, services, and resources, regardless of their gender, abilities, socioeconomic status, age, or origin. This includes access to education, healthcare, housing, and other essential services. This type of city should also be designed to meet the different needs of all social groups. It should offer safe and welcoming urban neighborhoods, that can promote societal integration and cohesion. Just cities are platforms of growth and prosperity. Their citizens are provided with open and accessible learning arenas. These arenas enable interactions, exposures, and explorations at different levels. They support lifelong learning opportunities, which can help self-development and personal growth all the time and equally for everyone. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **The green city**

Cities have the transformative power to improve the overall environmental quality and fight global warming threats. This power relies on creating built environments that are centered around protecting and regenerating endangered ecosystems, using efficient and natural-based solutions, and operating with carbon-neutral systems. These main principles can be achieved by investing in

climate-neutral energy supplies, carbon-neutral buildings, renewable resources, efficient technologies, and circular economies. Urban transport and all forms of mobility and logistics must adopt low-carbon, carbon-neutral, and efficient systems. In order to reduce the transport and mobility needs, polycentric settlement structures of mixed and multiple uses should be provided. These settlements should be dense and compact as possible and should encompass various uses such as housing, retail, production, and transport, with the inclusion of bike and pedestrian lanes as well. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **The productive city**

The transformative power of cities lies in their ability to create economies that depend on various sectors of production. These cities should provide jobs, attract investments, and invest in their social and logistical infrastructures. They should be attractive venues for businesses with a workforce that is skillful. This will create an environment that is creative and innovative, and that stimulates production and economic growth.

Productive cities are ones that adopt recent technologies, and digital and low-carbon systems in their economy. They support small businesses, low-emission manufacturing, and urban agriculture, which help re-integrate production into urban areas and provide a mixed-use neighborhood. All the services and infrastructures in a productive city should be affordable and accessible to all residents. Urban areas should offer attractive spaces of multifunctional use, which enables new opportunities for living, work, and recreation. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **Digitalisation**

Digitalization is not a fourth dimension of the charter vision of European cities, but it is a major factor that is integrated into all dimensions of sustainable urban development and has a great impact on all of them. It is a tool that has huge benefits and high opportunities for urban transformation, but it also has the potential to multiple risks on the social and spatial levels. Digital solutions and smart technologies are providing high-quality services to the public and businesses. These solutions include sustainable housing, smart urban mobility networks, efficient energy systems, and many more. However, they pose a threat to social and spatial unity and privacy security. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.) Digitalization is a powerful tool that should be utilized in a sustainable and inclusive way, and be adapted to the local conditions for a better outcome of urban development.

### 10.2.2. Three Spatial Levels

The NLC highlights three spatial levels at which the urban development approaches and policies should aim, and be tailored to the needs of each level in a balanced and equal weight: (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **The neighborhood:** Policies at the neighborhood level should be directed toward inclusivity and community building. They should provide the needed support to target challenges facing neighborhoods such as poverty, unaffordable housing, or social tension. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)
- **Local Authorities (Local Scale - One City):** At this level, decision-makers in municipalities define strategic guidelines and specific operations that help create a link between the smaller scale of the neighborhood level and that of wider functional areas at the regional and metropolitan levels. These guidelines include development plans for transportation, housing, and economy. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)
- **Functional Area (Regional & Metropolitan Scale - Towns, Cities, Suburban, Rural Areas):** Policies at this broad level are coordinated with the surrounding suburban and rural areas, where multiple partnerships and complex cooperative networks take place. These policies also include development plans for housing, mobility, services, energy supply, food systems, and many others. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

### 10.2.3. Key Principles of Good Urban Governance

The transformation of European cities and regions relies mainly on the level of cooperation in the work process between governmental and non-governmental actors from all levels and sectors, and their agreement on strategic principles to meet the goals of European and global agendas in an integrated and balanced. The strategic principles are based on a shared understanding of good governance. These principles act as a common ground with a set to build on, develop, and implement the Urban Agenda for the EU, as well as the urban and territorial dimensions of EU Cohesion Policy. (Eu2020.de, n.d.)

- **Urban policy for the common good**

Public authorities should prioritize public welfare and act in their interest by providing services and infrastructure for the common good. (Eu2020.de, n.d.) These services that the city offers should be available to everyone regardless of their social status or vulnerability. They should be affordable, accessible, safe, and inclusive for all. These common goods include education, health care, housing, energy and water supply, public mobility, information systems, and digital networks. It also includes the quality of the

built environment and the preservation and revitalization of cultural heritage. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **Integrated approach**

The integrated approach includes all aspects, levels, sectors, and interests related to urban development and coordinates them simultaneously. This approach encourages cities to adopt integrated and sustainable strategies for urban development while making sure to implement them at all spatial levels of the city. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **Participation and co-creation**

It stresses the importance of the involvement of all actors and stakeholders across all sectors of society including public participation, which ensures a democratic and collective urban development process. The co-creation and co-design approaches should be adopted as new forms of participation. This includes public citizens, community organizations, and private entities. This participatory process of development will help cities manage conflicts, allowing the share of interests and responsibilities, finding innovative solutions, and creating different forms of alliances and synergies. This will help provide an overall high-quality of the built environment. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **Multi-level Governance**

Good governance is marked by the degree of flexibility and cooperation among all societal sectors. All levels of urban and spatial policies should collaborate to effectively tackle complex challenges. These levels include governmental, local, regional, metropolitan, national, European, and global. This cooperative process should take place across the horizontal and the vertical approaches, as well as bottom-up and top-down approaches. (The New Leipzig Charter “the transformative power of cities for the common good”, n.d.)

- **Place-based Approach**

The place should be at the heart of urban development strategies and planning. These strategies should be tailored to meet the needs of every place for its unique purpose and contextual qualities. These strategies should be built on sound analysis, that highlights the needs, potentials, and risks of the specific local space situation, and help make informed decisions that benefit all residents equally at all levels. (Eu2020.de, n.d.)

In conclusion, The “LEIPZIG CHARTER on Sustainable European Cities” and the New Leipzig Charter (NLC) “the transformative power of Cities for the common good” (Eu2020.de, n.d.), both provide a powerful framework and key principles that ensure good and sustainable urban governance and set out urban policies that can achieve global and European agreements goals. Through the number of key dimensions, spatial levels, and fields of action identified in both documents, they highlight the powerful role of cities and their ability to transform and shape vibrant, sustainable, and inclusive societies, and the importance of holistic, participatory, and place-based approaches in urban governance. They placed great emphasis on the crucial importance of integrated development and cooperation among all actors and sectors of the community, and the provision of high-quality built environment and public spaces. They also marked the fundamental role of providing accessible and unlimited learning opportunities all the time and the key importance of deprived neighborhoods in the urban development processes.

By adopting and committing to this set of principles and adding to them at the national and local level, cities across the world can provide a better future and quality of living to all its residents in an equal and balanced way. Countries and cities of the world can take this example of the Leipzig Charter and develop their own charters that adopt global goals and principles, but apply them in relevance to their specific local resources and conditions.

### 10.3. The Social City Program

**Scale: Cities (Special focus on Deprived Neighborhoods)**

**Space: Physical Environment – Social Public Spaces & Educational Settings**

**Function: Urban Development Program**

**Actors: German Federal Government**

**Approach: Top-down**

**Aspects: Social – Economical (Education as a fundamental field for urban development)**

#### 10.3.1. Overview

The “Social City” program is a concept of urban development planning introduced in Germany in 1999 as a response to the social and economic challenges facing many German cities. This program supports urban areas that are less developed and experience multiple disadvantages in various aspects. (Schreiber, & Carius, 2016) These disadvantages include low-quality education and housing, poverty, social division, infrastructure decay, and lack of urban public mobility. The program acts as a concept that targets these deprived urban areas with special attention to deprived neighborhoods and supports them with financial investments for inclusive urban regeneration, and social and economic upgrade while providing a participatory process of decision-making. (Million, & Heinrich, 2017)

In 2014, the “Social City” became a guiding concept for all urban development planning at the different levels of cities, towns, and neighborhoods in Germany. The program is an important element of the Federal Government’s urban development assistance programs. It is aligned with the National Urban Development Policy, and it adopts the principles of the Leipzig Charter and puts them into governmental practice. The program provides financial assistance and support through its pilot project funding scheme, which helps improve the quality of life for residents in deprived urban areas. In 2015, it was equipped with around €150 million (which was a significant increase from previous years) and had funded 659 actions in 390 cities until the end of 2014. (Million, & Heinrich, 2017)

In Germany, education is considered a crucial aspect and field of action for integrated and sustainable urban development. It acts as a main element for both urban development policy-making and practice. (Million, & Heinrich, 2017) This approach to urban development puts education at the heart of its planning and indicates that the presence of high-quality educational infrastructures in cities will greatly influence the quality of life citizens experience. Cities and their neighborhoods should provide high-quality educational institutions, opportunities for lifelong learning, knowledge transfer structures, and vocational training opportunities.

The "Social City" program has funded multiple projects that adopt directly and indirectly the concept of "the city and the district as an educational space and opportunity". These projects address the topic of education as a common good and that the participatory process is an essential tool for urban transformation. The social city program has also supported various other projects that emphasize the neighborhood as the foundation for urban transformation, and that social space and local educational settings (educational landscapes) are its core essence. This has a great influence on the urban development plans and policies and promotes the shifting towards a knowledge-based society.

### **10.3.2. Social City: Investments at the Neighborhood Level**

In 2007 this program was brought into being with the same main aim of developing weak and deprived areas and districts on the social and economic levels. In this program, social and urban problems are not viewed separately, but in relation to each other. This resulted in providing funding and assistance to projects with a directed focus on the improvement of social aspects and community development. It also shifted the urban development focus on buildings and structural renewals towards the social space urban development. (Million, & Heinrich, 2017)

The "Social City: Investments at the Neighborhood Level" program was a response to the growing inequalities, social segregation, and sociospatial differences in many German urban districts since 1990. Adding to these issues, are the lack of quality in education, the increase of dropout rates in schools, and the social issues that are not reflected in the educational curricula. This created needed support that was funded by the Social City program in the form of initiatives at the municipal level. This support was provided through various cooperations between schools and other institutions within the district whether educational institutions outside schools or other organizations. These cooperations occur in the form of arranged transitions between work and school, daycare facilities and schools, or other platforms that can offer this kind of cooperation. The cooperation also included the training of district staff on specific issues and acquiring the needed skills to handle these challenges. (Million, & Heinrich, 2017)

These issues highlighted the important role of education in the social urban development of deprived neighborhoods. (Million, & Heinrich, 2017) Previously, schools and education as a field of action were not of primary importance in the social city program. Over time, surveys and reports of the social city program areas revealed a significant gradual increase that reached around 63%

of program areas that adopted school and education as a field of action and integrated them into the neighborhoods. This crucial importance of "school and education" as a field of action in the Social City program (Million, & Heinrich, 2017) is due to the high level of educational disadvantages that affect most children and adolescents in the program areas. (Million, & Heinrich, 2017)

In conclusion, the social city program provided the opportunity to harmonize the transition between formal and informal educational settings within the living environment of the same district, by adopting integrated and social urban development approaches. It enabled a series of collaborations between educational institutions and district management, the opening of schools, and their development to become neighborhood centers while expanding the use of their facilities to benefit the whole neighborhood community. The social city program plans and actions have transformed the living environment into platforms of learning and recreational activities. As a result, the topic of educational landscapes has gained significant focus in the social city program development plans.

The social city program is one example of how different governments and local authorities can meet global goals and local charters through their own regulations, programs, and resources.

### **11. The Neighborhood as a Learning Environment – Socio-spatial Educational Landscape (Urban Neighborhood Level)**

The socio-spatial educational landscapes have been previously elaborated in an earlier section of this paper. It is considered an effective tool for the methodology of adopting education as a field of action in integrated urban development approaches. Socio-spatial educational landscapes are formed through the collaboration of different actors within the community to reshape and design and reshape the living conditions of deprived urban areas (especially deprived neighborhoods) and utilize the social spaces as educational platforms for a holistic and interactive learning experience, and an overall effective outcome and upgrade to the social and economical level of these neighborhoods.

Socio-spatial educational landscapes are embracing the urban development concept of "The Campus" in the implementation of practical cases. The Campus concept is characterized by linking both the pedagogical and spatial aspects in a holistic process of developing socio-spatial educational landscapes. It focuses on making integrated use of infrastructure to create open and attractive learning environments that support physical development, personal growth, and social bonding. It is trying to free learning from its restriction to school boundaries and spreading the learning process and experience all over the neighborhood facilities and spaces, for which it aims at facilitating the school-career transitions from the early age of education and learning.

**Key Elements for Effective Learning Environment**

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

**11.1. Campus Rütli Berlin**

**Scale: Neighborhood**  
**Space: Physical Environment – Social space as Educational Space**  
**Function: Urban Development Program**  
**Actors: German Federal Government**  
**Approach: Top-down**  
**Aspects: Social – Economical (Education as a fundamental field for urban development)**

**11.1.1.Overview**

The Campus Rütli Berlin is an example of sociospatial educational landscapes and a practical implementation of “The Campus” concept of urban development. It is located in the “Reuterkiez” neighborhood in Berlin. The campus is a result of a transformation process for the existing Rütli school to a new pattern of “joint school”. It is formed through an alliance of different partners within the Reuterkiez neighborhood to improve the living conditions for all its residents, with specific attention to children and adolescents. These partnerships took place among two day-care centers, a community school, a youth club, a music school, a community college, and others as well. (Million, & Heinrich, 2017) This type of cooperation and coordination provides a harmonized transition between the different institutions and the various activities which enables unlimited learning opportunities at all life stages. The aim of the campus is to bring together both the school and the neighborhood life in one unified platform for all residents of the neighborhood. (Million, & Heinrich, 2017)

**11.1.2.Problematic Situation – A needed Response**

Campus Rütli is located in the Neukölln district of Berlin, and Reuterkiez is the neighborhood around Campus Rütli. (Million, & Heinrich, 2017) The Campus Rütli was initiated in response to the issues and problems stated in an urgent letter from the teaching staff in 2006 to the Senate Administration for Education at Rütli High School in the Reuterkiez neighborhood.

The land development in Reuterkiez and the district is characterized by five-story, high-density, block-perimeter buildings from a historical period of 1888. The green and open spaces are forming only 15% of the Berlin standard, while the playground coverage rate is around 45% of the standard value. The district residents have an unemployment rate with an average of 9.5%, while half of these residents have a migration background. All these factors contributed to the increase in poverty and crime rates, and the lack of social bonding. (Million, & Heinrich, 2017)

**11.1.3.Campus Configuration**

As a response, actors collaborated to provide a solution to the campus in relevance to their similar experiences on the same topics and aims. They worked together to provide various initiatives to create the campus. The neighborhood management was practical in the process of bringing Campus Rütli into being from conception to realization. They depended on familiarity in picking the actors involved and worked on utilizing the existing network of activities in the Reuterkiez neighborhood, to provide the support needed for the development of a good educational network.

The campus depended on a dual leadership approach. It was operated by two directors for its development; A retired school principal acting as pedagogical supervisor and a neighborhood manager in charge of the networking and construction management efforts. (Million, & Heinrich, 2017) The Campus was composed of different initiatives and programs that were organized through a cooperative framework of voluntary commitment between the involved actors. This includes the Rahmenkonzeption Campus Rütli [Framework Concept for Campus Rütli], the Elterninitiative Reuterkiez [Reuterkiez Parents’ Initiative], the neighborhood council, and the Ein Quadratkilometer Bildung [One Square Kilometer of Education] program. The campus is receiving financial and administrative support from various departments including the Senate Department for Education and the Senate Department for Urban Development. (Million, & Heinrich, 2017) Monthly and annual meetings are organized among the involved partners, politicians, and state and municipal representatives for the arrangement and the feedback on day-to-day cooperation and the overall development process of the campus. (Million, & Heinrich, 2017)

The campus structures are constituted of various functions that are spread across the campus area. Some of these structures were designed for multi-functional use purposes within the same building outline. The functions included in the campus structures include a new neighborhood sports center, a three-part gymnasium used for school and club sports, and the sports hall and the foyer can also host different events such as concerts and exhibitions. The new neighborhood center is the perfect definition of a multi-functional space, with the aim of providing lifelong learning opportunities. It will host a number of functions that vary from a parent center to a pedagogical workshop, neighborhood coordination, parts of the youth welfare office, a dental service, (Million, & Heinrich, 2017) a space for networking activities, and the community college. (Million, & Heinrich, 2017)

By offering attractive open spaces to the neighborhood residents, will encourage them to use the campus and promote social communication and interaction, so that learning can take place.

#### 11.1.4. Conclusion and the key factors for the Campus Rütli success

The Campus Rütli is a good example of a socio-spatial educational landscape. It draws a realistic image of the possibility of developing deprived urban areas and neighborhoods through educational sites and process development. It highlights the strong connection between education and development, and how the adoption of the concept of education as a field of action in integrated urban development is a crucial approach.

One of the main key factors and reasons behind the initiation of Campus Rütli was the concentration of a number of existing educational institutions in one small area. This spatial proximity eases the way for organizational cooperation and the smooth transition between school-career activities and provides high potential for the overall success of the project.

Overall, the Campus Rütli has provided a number of services and opportunities for the residents of the neighborhood. It has increased the potential for lifelong learning opportunities, contributed to solving many complex challenges, and helped to improve the quality of life for all members of the community.

The Campus concept is a concept that can be adopted in local neighborhoods around the world, in which it can implement city programs that achieve the goals of global or local charters. This neighborhood educational concept of the campus can also be developed to implement the ILC concept. It can incorporate learning facilities within workplaces, and utilize this advantage of proximity to diffuse learning across all facilities and disciplines of the neighborhood.

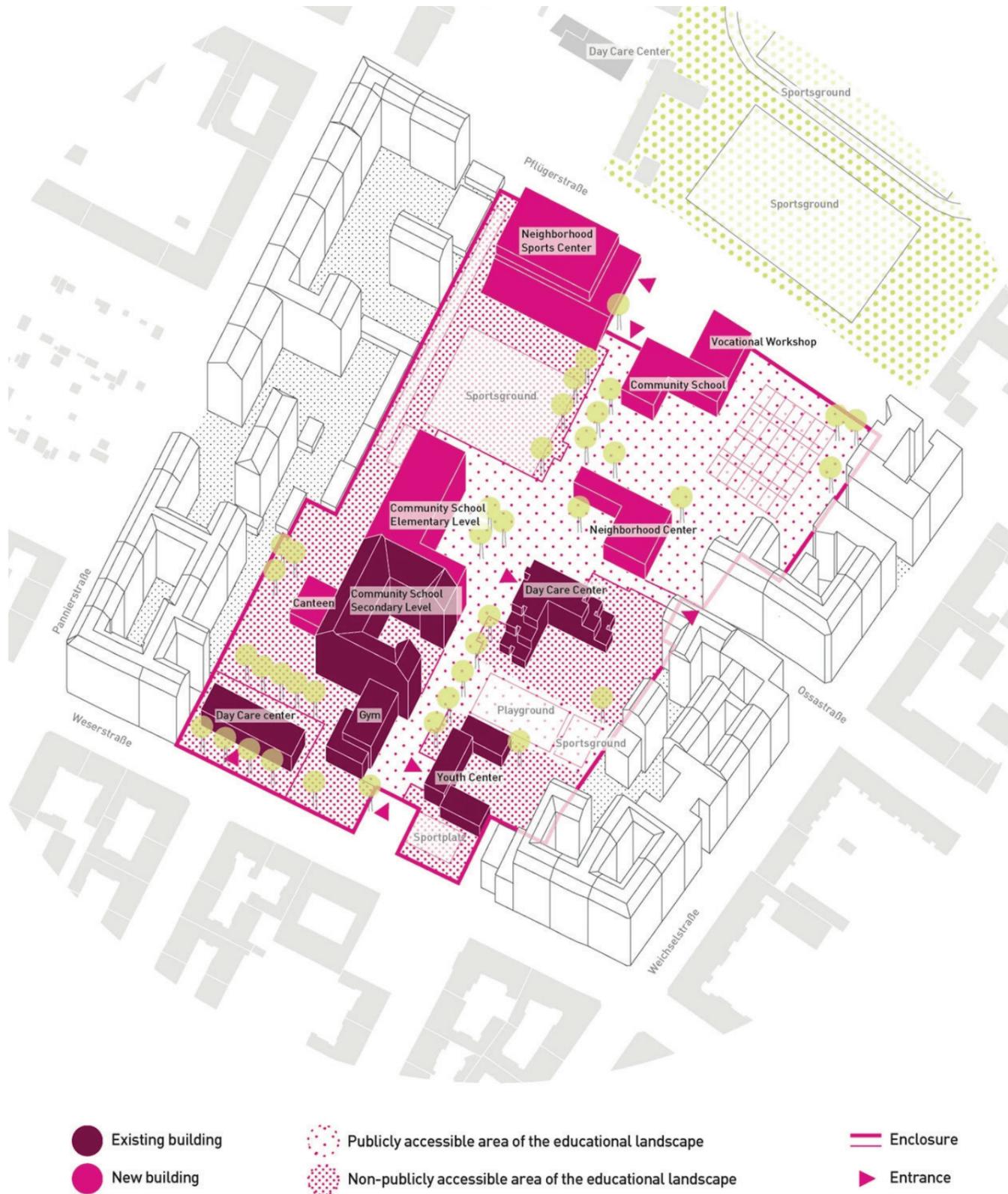


Fig.17 The sociospatial educational landscape Campus Rütli in the "Reuterkiez" neighborhood in Berlin  
Source: (Million, & Heinrich, 2017)

Key Elements for Effective Learning Environment

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

## 12. Alternative & Personalized Education (Methodological Level)

### 12.1. Elon Musk Schools (Ad Astra School – Astra Nova School)

**Scale: School**

**Space: Physical & Virtual Environments – Private**

**Function: Educational**

**Actors: Elon Musk – Private**

**Approach: Bottom-up**

**Aspects: Alternative & Personalized Education**

#### 12.1.1. Elon Musk

Elon Musk is an engineer, investor, product architect, owner, founder, cofounder, CEO, and above all a visionary. He is an American entrepreneur who is involved in many major projects, entities, and products around the world. The most famous of them include PayPal, Space X, Neuralink, Tesla, and Twitter (currently X). (Gregersen, 2023)

#### 12.1.2. Ad Astra “To the Stars”

As a pioneer in many fields of life, Elon Musk tried to describe his perception of traditional schooling and education. He elaborated his vision and analogy for how education should work by simply explaining and showing how his school “Ad Astra” operates and what are the main principles that it stands for. In his interview with the Chinese television network, he stated his honest opinion about traditional education methods and curriculum and explained the reasons behind the necessity of creating an Ad Astra school.

*“... teachers don’t explain why kids are taught a subject. They are taught a mathematical formula without explaining why this formula is important. Ad Astra is different from any other school, where there are no grades, there’s no grade 1, grade 2, or grade 3 type of thing. I’m making all the children go in the same grade at the same time like an assembly line. Cuz some people love English, some love Math, some love Music and different abilities, different times. It makes more sense to cater the education to match their aptitudes and abilities, (Brown, 2022) and that’s one principle. Another principle is teaching problem-solving, teaching to the problem not to the tools. Let’s say you are trying to teach people how engines work, you could start with a more traditional approach in which you would say we are gonna teach you all about screwdrivers and wrenches and you even have a course on screwdrivers, a course on wrenches and all these things, and this is a very difficult way to do it. A much better way is that here is the engine and let’s take it apart, how we’re gonna take it apart? .. oh you need a screwdriver, that’s what a screwdriver is for! you need a wrench, that’s what the wrench is for. And then a very important thing happens which is that the relevance of the tools becomes apparent.*”

*I just didn’t see that regular schools were doing the same things I thought should be done, like you know those two principles, they weren’t adhering to those principles ... It seems to be going really well, the kids really love going to school, I think that’s a good sign. I mean I hated going to school when I was a kid, it was torture; The fact that they think vacations are too long, they want to go back to school .. yeah exactly!” (Elon Musk best videos, 2015)*

Elon Musk’s vision for the future of education has directed his efforts to create a school other than the traditional one we are familiar with, as he believed that current schools are not good enough to prepare children for the future. He wanted to provide an alternative type of schooling, that could speed up the intellectual development of kids and make them love going to school; And that’s when Ad Astra was born.

Ad Astra was an unconventional-free to-students school (as Musk was responsible for covering all the financial needs at a yearly cost of \$475,000) that offered an alternative type of schooling and aimed at producing unique and creative thinkers, not routine factory workers. It started as a school only for Elon’s kids and other kids of some employees at SpaceX. (What we believe, n.d.) The location of the school at a rocket factory in California made it the one and only of its kind. Students of Ad Astra were exposed in their daily activities to the factory works and designs as that of Tesla’s studio and SpaceX rocket designs.



Fig.18. SPACE X Factory  
Source: (Newstink, 2023)

The Ad Astra school had a lot of potential for creativity as it was created from the first principles without any bounding commitment or mandatory restrictions to a certain curriculum or structure, while the only main instruction and directive from Elon Musk was to “make it great”. (What we believe, n.d.)

Elon Musk believed that teaching how to think is the initial fundamental step, and he relied on the first principle analysis as a base for critical thinking. The first principle analysis is simply figuring out how things work by boiling them down to the basics. It is the ability to not be bound by what has already been done, going to the basic elements and core foundation of things and maybe creating something totally different. (Newsthink, 2023)

Ad Astra curriculum was created with great help and support from Josh Dahn, who was a teacher of one of Elon’s sons who taught at a private school for gifted children in LA. Dahn was included in the initiation process for the school as requested by Elon Musk. (What we believe, n.d.)The curriculum and the learning experience were not similar to that of ordinary schools. Instead of attending classes in languages, music, or sports, kids focused on critical thinking. To clarify, they were asked to solve problems that are facing SpaceX



Fig.19. Taking Engine Apart  
Source: (Newsthink, 2023)



employees (i.e.; imagine how a grid fin can be redesigned, this refers to the fins that come down when the Falcon 9 – an orbital class launch vehicle – lands, could you imagine other designs?, how would you know if these designs are more effective than the current one?). (Jones, 2022) These kinds of questions are provocative ones, in which their objective is to develop the ability to reason. This helps to figure out various pathways that they can approach and provide different exposures that will create an opportunity for decision-making, which is another important skill to be acquired at this early age.

Fig.20. Ad Astra Critical Thinking Learning Activities  
Source: (Newsthink, 2023)

### 12.1.3.From Ad Astra to Astra Nova “From to the Stars into New Star”

Josh Dahn – co-founder of Ad Astra school – announced in May 2022 that Ad Astra has changed to become Astra Nova – meaning “New Star” – as an online school, after 8 years of Ad Astra experiment that hosted 50 students. (Hollier, 2022)

Astra Nova is considered a non-profit experimental school that is committed to meeting 100% of financial needs by providing learning needs through courses that change every term while providing financial aid for families that are not able to afford full tuition fees in relevance to their financial situation. (What we believe, n.d.) The school started by offering online classes for 6-16 students that take place on Thursdays only, and then this changed later to provide a full-time comprehensive program and a part-time supplemental program. (What we believe, n.d.)

A difference between the two schools is that Astra Nova accepts applications from students all over the world ages between 8 -14 years old (later 10-14). All students have equal and fair opportunities to join the school, regardless of their backgrounds. Astra has served around 200 students, about 50 of them are full-time, while the rest attend part-time. (Jones, 2022)

Astra Nova is solely founded by Dahn and Elon Musk is no longer connected to the school. The admitted students should submit a video of a problem that is set by the school. For example “The Lake conundrum” is a set problem that discusses issues around manufacturing processes, water contamination, and pollution. Josh Dahn believes that this school is not for everyone. Not all students can learn through online and digital mediums. (Hollier, 2022)

The school offers an exclusive learning experience that is provided in two ways, direct and indirect. The direct way is through scaling ideas within their two programs “Conundrum” and “Synthesis”. The indirect approach happens by opening the gates and conquering the fear. This approach acts as a cover for other schools all over the world to go for something bold and try abnormal experiments. This all goes on with the hope of being a motivation for something or someone who has the power to make a bigger change. A step forward that can be a reason, a tool, and an inspiration to authorize educators to design more schools that children love. (What we believe, n.d.)

### 12.1.3.1. "Synthesis" Program

Synthesis is an online enrichment program for kids ages 8-14 that applies the same type of thinking as Ad Astra School. It was designed by Josh Dahn, who is the creator of Elon Musk's Ad Astra School. In synthesis, collaboration, and kindness are the main qualities needed for progress and development. (Jones, 2022) The dependence on these qualities is essential for creating an environment with no room for selfishness. An environment where children care for other people, try to bring out their voices, and make them better, alongside their own voices and individual purposes.

Synthesis is a creative methodology of education that uses a combination of learning and having fun at the same time. This approach is composed of different game types that focus on developing core qualities and ways of thinking. (Synthesis, n.d.) It helps them acquire the necessary knowledge and skills that will support their progress. Children can advance their progress in a creative and effective way on different topics and subjects. This helps them to build strong personalities, take the responsibility of making complex decisions, and embrace their talents to solve difficult problems.

Synthesis relies on two approaches for learning: Synthesis Tutor and Synthesis Teams. It also uses conundrums as a fun tool for learning within the synthesis program. (Synthesis, n.d.)

#### ▪ Synthesis Tutor

Synthesis Tutor is a personal AI tutor that can help a child learn anything anywhere and at any time. It can support him in learning Mathematics but in different narratives that develop his mental abilities of critical thinking and cognitive skills. These narratives include the power of numbers (computer code, Egyptian hieroglyphics, notches on bones), Arithmetic properties (geometric forms, calculation methods, how to use shapes, statistics), Algebraic thinking (what to do when you don't have all the information, how to reason, generalize, and find patterns when facing unknown facts). (Synthesis Tutor, n.d) The AI tutor was designed by Dr. James Tanton (one of the greatest math curriculum designers in the world), and it adheres to the highest standard criteria of math education. (Synthesis Tutor, n.d.)

Synthesis Tutor is a customized AI system that was built by DARPA (An American governmental agency that is behind GPS and the Internet) after decades of research that proved to be an effective tool for learning with 99.99% more than that of traditional classrooms. (Synthesis Tutor, n.d.)

#### ▪ Synthesis Teams

Synthesis Teams is a collaborative thinking game for children around the world of age between 8-14 years old. It offers a fun way of learning, but one that is also rigorous as both or of the same priority. (Synthesis Teams, n.d.)

In synthesis, students around the world are super collaborators who work together to create different strategies through a critical thinking process. This helps them to acknowledge communication and teamwork skills that are essential in real life. They team up to solve complex problems that are even more difficult for adults. This kind of complexity helps students master skills that enable them to discuss and think about topics such as civil debate and business investments. It also encourages them to imagine what the future will look like, and then try to build that future. (Synthesis Teams, n.d.)

At Synthesis Teams, a kid can play the same game, but will not always be using the same strategy. The program allows children to find their own speed without limits, giving them the opportunity to be who they are and who they can and want to be, they can adjust to embrace the chaos of this world and be the leaders in creating their future. It is a tool that is designed to cultivate student voice, strategic thinking, collaborative problem-solving, and team decision-making. It also provides him with the ability to take risks and execute fast.

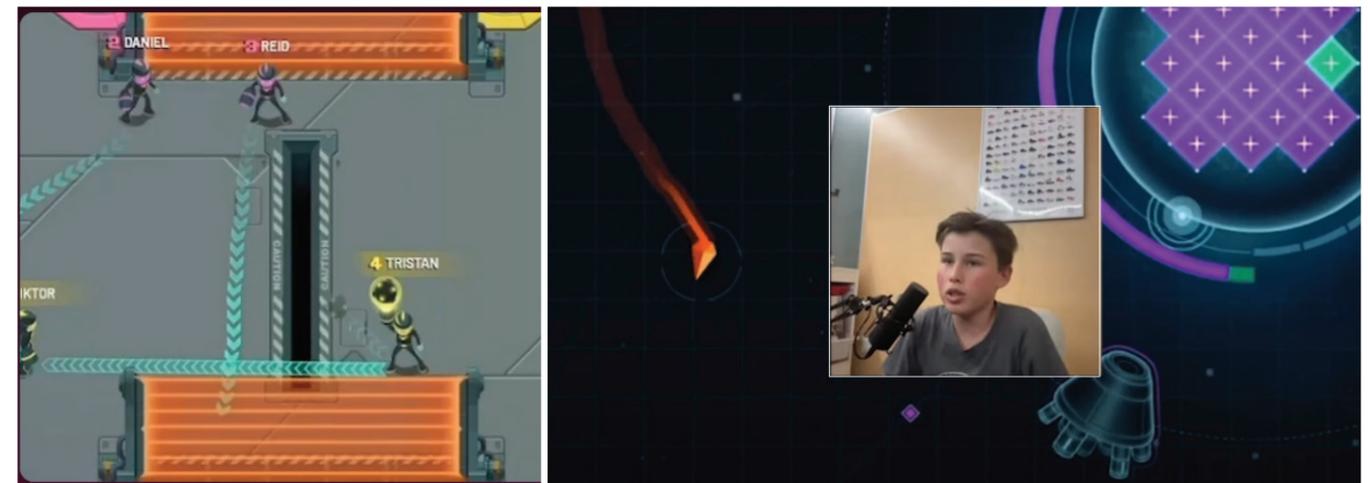


Fig.21. Synthesis Teams - Collaborative Thinking Game  
Source: (Synthesis Teams, n.d.)



Fig.22. Class Dojo Platform  
Source: (ClassDojo, n.d.)

### 12.1.3.2. Conundrums

Conundrums meaning in simple words, are difficult or confusing questions that are designed to help you disagree in a constructive way. They are complex situations created to highlight that there is no one obvious, good, or right answer, but rather a difficult choice to be made. (ClassDojo, n.d.) Astra Nova created the conundrums program through its collaborations with other organizations to help improve the educational experience for students. These organizations include Artrake for animation and ClassDojo for distribution on their global network. (Conundrums, n.d.)

ClassDojo is a virtual community that brings together teachers, students, families, and all learners around the world in one unified platform, where they can share their learning experiences and moments through photos, videos, messages, and many other ways. (ClassDojo, n.d.) For Astra Nova, they designed different conundrum episodes as a learning series of activities that help students develop problem-solving and critical-thinking skills!

Synthesis has proved to be an effective program for learning, that teaches kids advanced concepts and strategies, and helps them depend on their thinking and abilities to navigate through complex problems and situations. It is a personalized learning experience that adapts to the student's pace and topics of interest while providing him with tailored feedback. Children became fond of learning, because they learned to love learning.

**In conclusion,** Ad Astra School and Astra Nova Schools are clear examples of why Elon Musk doesn't believe in traditional schooling methods and how his vision for the future of education and learning can produce young generations of innovative thinkers and brilliant minds. His bold steps in approaching his goals, taking risks, and building his imagination are a practical example that shows the importance of acquiring these skills through the methods of his alternative schooling, which should be the traditional way of schooling. In both schools, the learning environment was created to put the child's needs and requirements for development at its center. They adopted the learn-by-doing approach, which is a catalyst for creative thinking and innovative solving of problems.

Elon Musk is calling for a radical shift in the traditional educational system through Ad Astra and Astra Nova schools and his broad vision for the future of education. He emphasizes the priority of shifting towards experiential learning and practical application, where students can acquire necessary skills and develop essential abilities that are relevant to real-world experiences and situations.

Ad Astra school encompasses many positive features of innovative learning, where it provides an alternative method of education, allows students to learn and develop their analytical thinking and creative skills through the specific field of practice materials and tools, and offers the learning of different disciplines using the work scope and building facility of space X. This helps students to learn the different disciplines and understand their essence in their authentic form and original platform.



Fig.23. Class Dojo Conundrums  
Source: (ClassDojo, n.d.)

**Key Elements for Effective Learning Environment**

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

**12.2. AltSchool**

**Scale: School**  
**Space: Physical Environment – Private**  
**Function: Educational**  
**Actors: Max Ventilla – Private**  
**Approach: Bottom-up**  
**Aspects: Personalized Education**

**12.2.1.Max Ventilla**

Pioneers and brilliant thinkers in different fields are not settling for the traditional schooling methods and basic curriculum that the regular schooling system is offering. They don't think the educational system is providing students with the needs for the future, but rather of the past. In the following example, we are going to elaborate on the case of Max Ventilla and his AltSchool.

Max Ventilla is a former Google executive who was in charge of personalization. Max and his development team were able to use technology to identify the things and genres that people are interested in, motivated by, and attracted to. They were able to develop user profiles with customized search results, depending on the data collected from a person's behavior on different Google properties as Gmail and YouTube. (Rieland, 2016)

In relevance to Ventilla's work experience and as a master in the field of personalization through the use of technology, he wanted to provide his kids with a learning experience that is tailored to their needs and interests. He approached these thoughts on his search journey for a pre-school to his daughter. Then, the analysis and questioning of the available learning methods and educational system was on the rise. Max started wondering about how schools are providing all students with the exact same things in the exact same way as if they are all alike. These kinds of wonderings lead finally to the foundation of the Alt School. (Rieland, 2016)

**12.2.2.AltSchool Overview**

AltSchool is an educational business model that adopts personalized educational methods and technological systems to meet the needs of each individual student, allow him to follow his interests, and help create his own learning journey at the preferred pace. (Rieland, 2016) The school focuses on social and emotional learning, and the dynamism of its learning environment, where change is a constant factor. (Rieland, 2016) It also prepares kids with the ability and potential for lifelong learning.

AltSchools has been operating on a small scale since 2013 and reached an expansion of eight private schools in California and New York. The most recent one is located in San Fransisco and is considered to be the largest of them hosting around 75 students. (Rieland, 2016)

AltSchools have no defined levels or formal grades. They rather divide students into three defined groups foundational elementary, upper elementary, and middle school. The maximum age that attended the schools among all its 450 kids has been no more than 14 years old. (Rieland, 2016)

**12.2.3.Methodology**

AltSchool methodology combines both traditional and advanced methods in its learning process. It brings together the traditional classroom learning and technology-enabled learning methods in one environment. (HBS123, 2018)

The AltSchool learning experience relies mainly on technology as a base for the learning experience. The school's team of 50 engineers developed a technological system that uses data data-intensive approach to personalize K-12 education for the individual needs and interests of each student. The system is used through tablet-based learning plans that collect meaningful information about student learning ways through the associated data entry, and to support teachers in tracking students' daily progress in a more detailed way. Also, the school classrooms are all recorded using custom-built cameras and microphones, with the purpose of helping teachers go through records and tapes to be able to identify students' delays in progress in certain subjects. All these data collected are accessible to both parents and teachers for the continuous follow-up to student advancement and progress. The data identified by the educator for the child's progress can also be used to help developers in creating metrics that can support other students of similar abilities and situations in different schools. (Rieland, 2016)

Although there is a great benefit to the collection of these data, it raises a lot of concerns and risks regarding the ability of the school management to protect students' privacy and the security of their data.



**Fig.24.** AltSchool Technology-based Learning Exerience  
 Source: (Rieland, 2016)

#### 12.2.4. "Little Learning Labs"

The AltSchool classrooms are designed as "little learning labs". Instead of each individual student learning through a textbook, he has his own unique "playlist" that he works with. This playlist defines a personalized learning plan of curriculum, activities, and projects that are based on the student's interests and the type of conditions that suit his learning style and encourage his progress. These conditions can be a student's preference to work in teams, to just communicate with one partner, or even work solely on his own. (Rieland, 2016)



Fig.25. AltSchool Little Learning Labs - Individual Playlists of Personalized Learning plan  
Source: (Rieland, 2016)

The "playlist" also includes a list of 25 items for each week that need to be accomplished by the student. Every list consists of a series of activities called cards. These cards are designed, altered, and uploaded by trained educators (more of a facilitator for learning and not a direct teacher) for each student, to help him learn and progress. The activities indicated can vary between watching an instructional video or using a learning application on an iPad. Regardless of this identification and design of activities, that are also relevant to the student's interest and goals and are not forced upon by the educator, the student has the flexibility of choosing what and when they want to work on them and customize them in relevance to their interests and final goals. The AltSchool approach to learning is similar to that of "Montessori" schools, as it was also called "Montessori 2.0." after its opening in San Francisco. (Simon, 2016)

#### 12.2.5. Building a Network

The future goal of the school is to build a network to share its learning with other school partners. (Simon, 2016) For this aim, Ventilla announced the launch of AltSchool Open, which is a step forward to provide opportunities for interested private schools to adopt the AltSchool model and license its software. This approach is not yet successful as the number of interested schools started around 200, but narrowed down until it reached only one school. (Rieland, 2016)

In conclusion, AltSchool philosophy of a personalized approach to learning has a major potential for success if adopted on the broader scale of all the learning facilities within the community. It will help all children of society to realize their full potential, learn about passion, and pursue their interests and goals from the very beginning of their educational journey. For this purpose, AltSchool has been working on its current expensive small-scale technological system through financial support and investments received from big entrepreneurs names of Silicon Valley (Such as Mark Zuckerberg), with the hopes of being able to scale it up over time. This aims at the overall holistic goal of the school of offering its license software and data analysis to accommodate all public educational institutions and learning platforms within the community and provide the opportunity for personalized education to all public masses at lower costs.

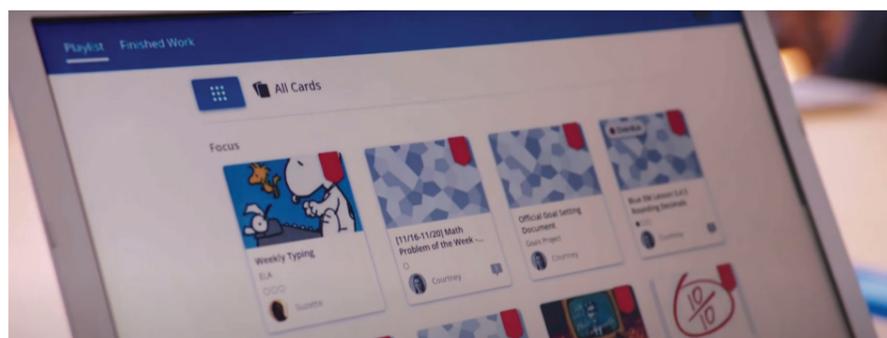


Fig.26. Playlist Learning Cards  
Source: (Rieland, 2016)

**Key Elements for Effective Learning Environment**

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- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

**13. Professional Practice-Education (Urban Neighborhood & Architectural Level)**

**13.1. Megawra - BEC, Cairo, Egypt**

**t**  
**Scale: Urban Neighborhood**  
**Space: Physical Environment - Public**  
**Function: Educational**  
**Actors: NGO & Architecture Office - Private**  
**Approach: Bottom-up**  
**Aspects: Heritage Education**

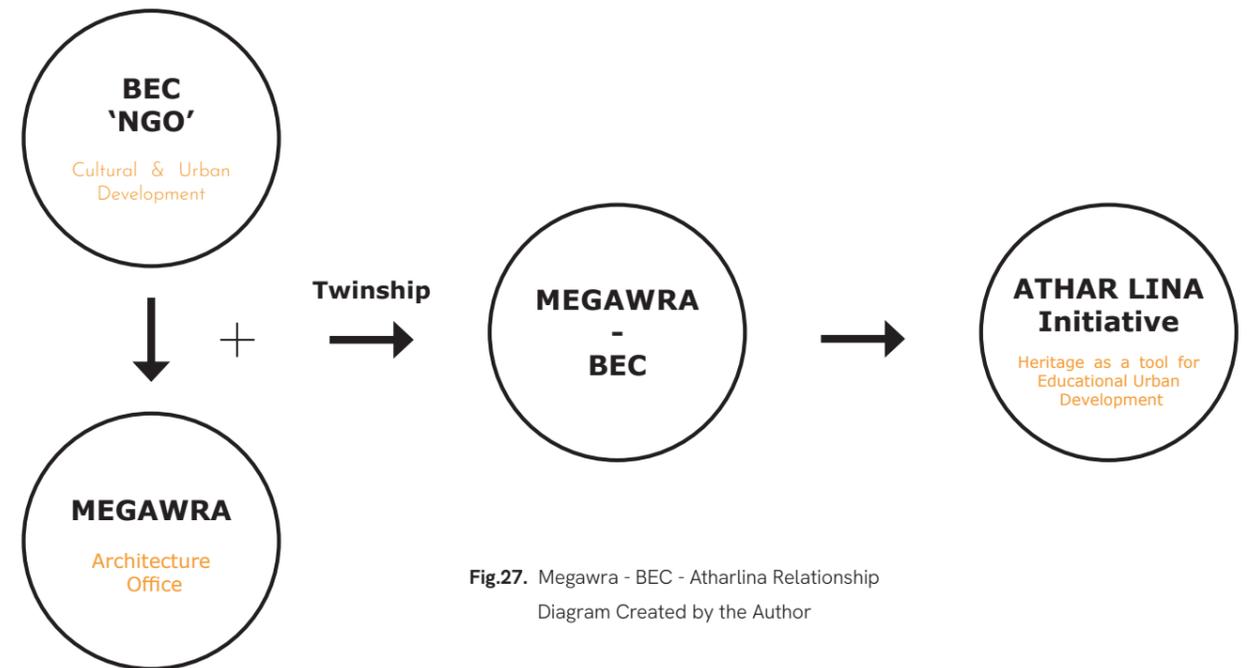
**13.1.1. What is BEC**

BEC is short for the “Built Environment Collective”, an Egyptian NGO that has been operating since 2011 and specializes in place-based cultural and urban development. (Megawra, 2023) Through its efforts, it raises awareness for cultural heritage preservation and sustainable urban development. In 2012, BEC opened its doors for architects, professionals, academics, and the general public in its Heliopolis hub in Cairo, where it aims at reducing the gap among them through its weekly programs that include lectures, workshops, walks, seminars, events and exhibitions that are related to urban design, architecture, and environmental challenges. It also provided young architects with workspaces and research sources. (Alkhalifa, n.d.)

**13.1.2. Megawra Brief & Essence**

Megawra is a non-profit architectural firm in Cairo - Egypt, that was established in 2014 to act as a professional arm for BEC, in which it specializes in heritage management, and the revitalization and conservation of historic urban built environments, using integrated participatory approaches. Megawra’s projects and experiences lie mostly within Historic Cairo, where it offers services that include research, consultation, and implementation. (Megawra, 2023)

The office name “Megawra” is a wordplay that delivers two meanings in the Arabic language, the first is mentorship and the second is neighborhood. In relevance to this essence, the office aims to provide a base for knowledge-sharing among the learning community of students, professionals, and academics in the fields related to the built environment. It offers this opportunity through various forms that include internships, workshops, training programs, toolkits and guides, and collaborations with universities. (Megawra, 2023)



**Fig.27.** Megawra - BEC - Atharlina Relationship  
 Diagram Created by the Author

**13.1.3. Megawra - BEC**

**13.1.3.1. As a Twinship**

Megawra - BEC is a twinship between Megawra and the Built Environment Collective (BEC). It acts as a platform for both debate and action in the field of architecture and urbanism while promoting sustainability and social responsibility through its focus on art, theory and practice, and cultural heritage. (Alkhalifa, n.d.)

Megawra-BEC partner on “Athar Lina Initiative” with a shared responsibility, in which Megawra handles all the technical work and BEC directs its focus to community development. (Megawra, 2023)

**13.1.3.2. As a Space**

Megawra -BEC is a platform that hosts many activities and functions within its spaces. These functions and activities include: (Megawra, 2023)

- Megawra: It is a platform of professionals that provide mentorship and support for students in their fields of specialization.
- Maktaba: A specialized architectural library that offers orientation sessions, help guides, and resources.
- Maa’rad: A space that hosts exhibitions, shows and events.
- Muhadra: A variety of learning opportunities that meets student needs such as lectures, workshops, seminars, and training courses.
- Magmuaa’: Is a series of partnerships with different groups and initiatives that are focused on the built environment issues.
- Marsad: It is a collaborative research and development projects on the built environment.
- Musabqa: Competitions related to the built environment.

### 13.1.4. Athar Lina Initiative

#### 13.1.4.1. Overview

Athar Lina is an initiative founded and run by Megawra - BEC since 2012. The initiative's main goal is to utilize heritage as a driving force for sustainable urban, social, and economic development. (Megawra, 2023). It works on the heritage of Historic Cairo for the purposes of conservation, education, and the adaptive reuse of the historic built environment. (Alkhalifa, n.d.) Athar Lina operates in Al-Khalifa - one of the oldest neighborhoods in Historic Cairo - through an integrated participatory approach with the district citizens and various stakeholders for decision-making processes of heritage conservation. It aims at the understanding of the monument as a resource and not a burden. (Al Atharlina, 2023)

"The monument is ours" is the meaning of the initiative name in the Arabic language. Through the essence of this meaning, Athar Lina believes that this essence will have a direct impact on the community where they have a sense of heritage belonging to them, so they become active partners in its conservation process. (Alkhalifa, n.d.) Athar Lina is offering huge educational efforts for children of the Al-Khalifa district especially, Cairo's children and even the children of refugees as Syrian children. It achieves that through its heritage education approach that includes different programs and schools to protect and promote heritage while improving the quality of life for the district residents. These programs started in the year 2013 by implementing a pilot project in partnership with Shjarat al-Durr Primary School to create a school for Art and Heritage. In 2014, it created a Children's Play Space Workshop in Al-Khalifa Street and Khalifa Summer Camp at Al-Khalifa Community Centre. In 2015, it continued its efforts through the Athar Lina Cairo School Program Al-Khalifa District, and Athar Lina Fu-sha Project, and Fus-ha in the Museum in 2016. Its latest project "Athar Lina Heritage Design Thinking School" was established in 2018 and continued until 2022. All these efforts aim to provide awareness for young generations about cultural heritage importance and develop their creative thinking towards the surroundings through its various activities and programs. (Attia, 2022)

The Heritage Education and Industries Program provides product lines that offer a variety of contemporary products that are made from natural materials. These products include home accessories, jewelry, wallets, handbags, and pouches. Some of these product items are designed and produced by different participants of Athar Lina Heritage Design Thinking school, local craftspeople, and designers with an obsession for heritage. (Al Atharlina, 2023)

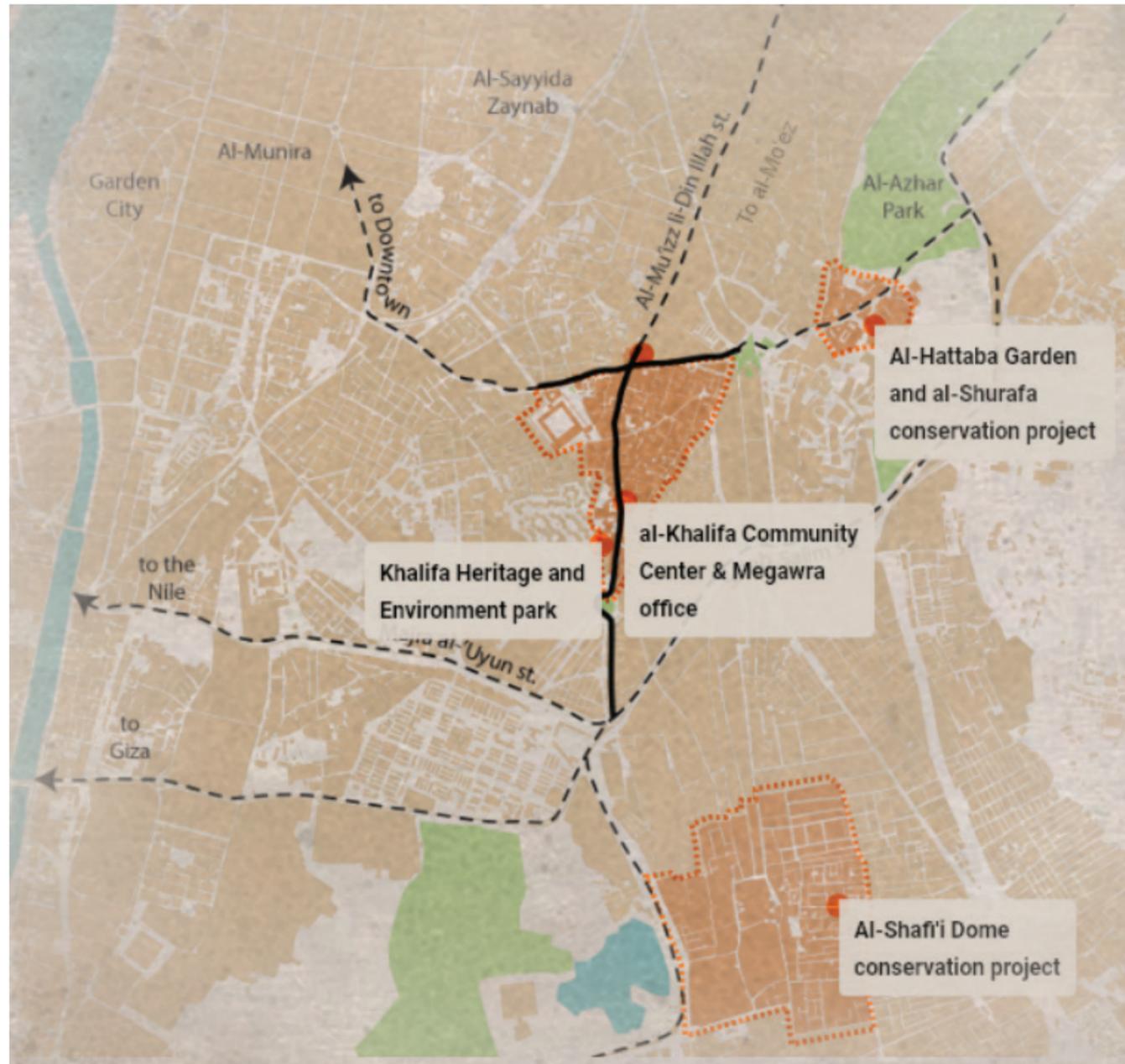
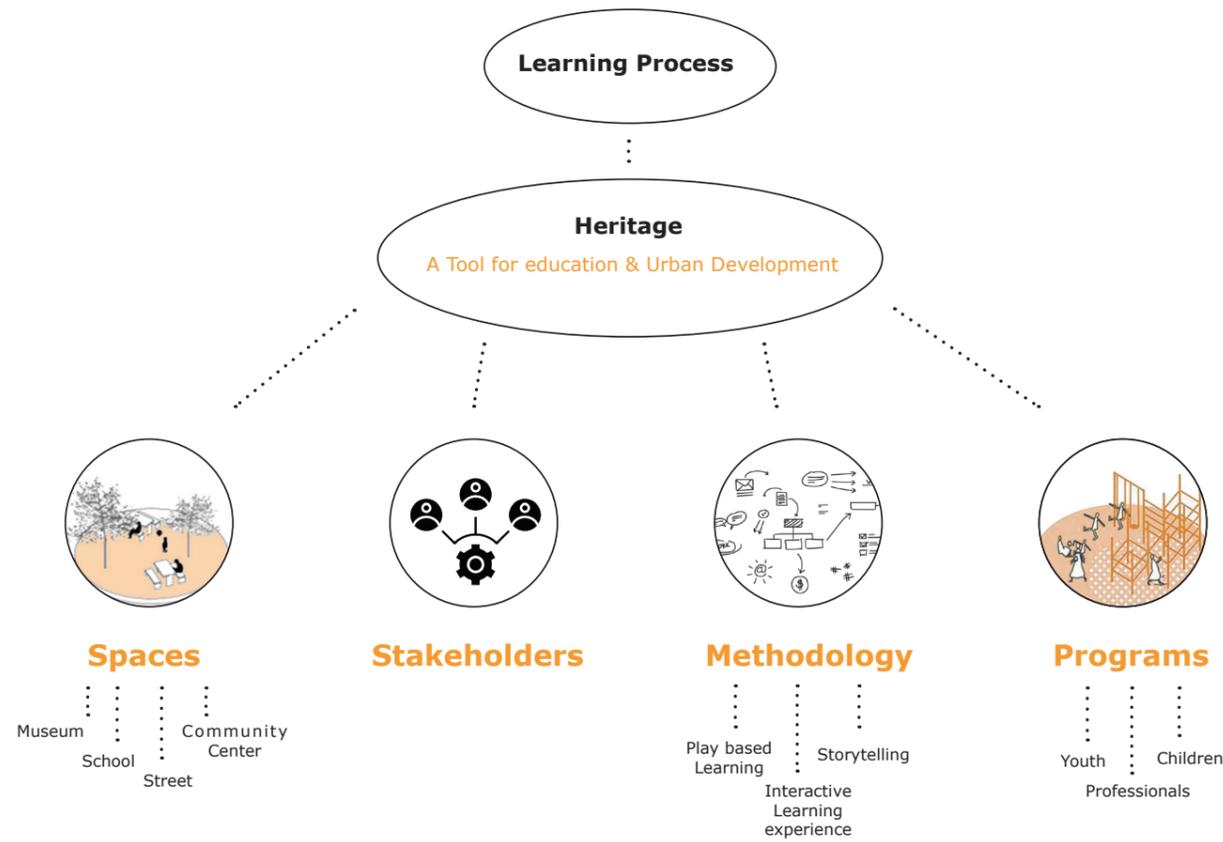
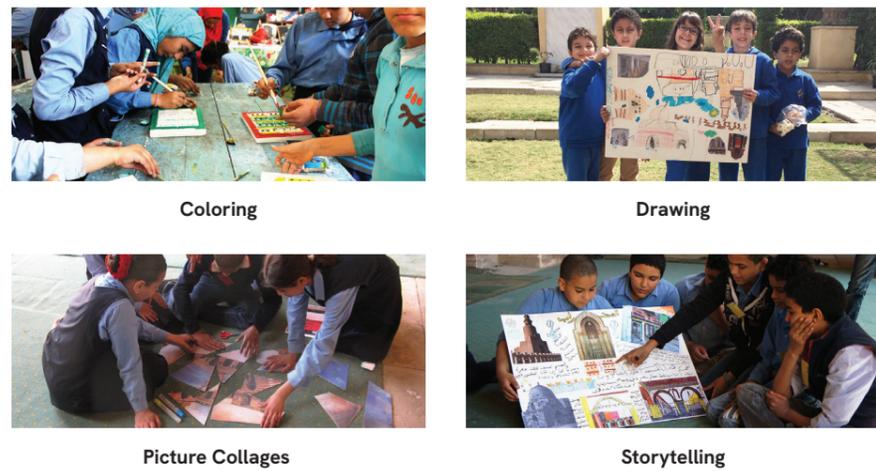


Fig.28. Al-Khalifa District Map in Old Cairo & Megawra office Location  
Source: (Alkhalifa, n.d.)



**Fig.29.** Athar Lina Learning Process Components  
Diagram Created by the Author



**Fig.30.** Art & Heritage School - Play-based Learning Activities  
Source: (Al Atharlina, 2023)

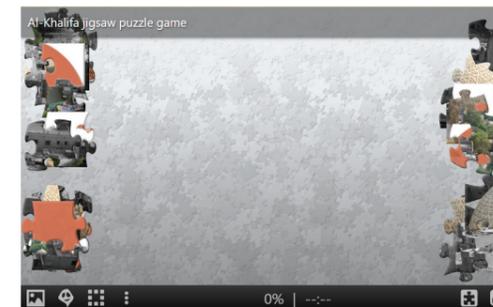
### 13.1.4.2. Heritage Education & Industries Program

#### 13.1.4.2.1. Athar Lina School for Art and Heritage

Athar Lina School for Art and Heritage is a pilot project that started it all. It acts as the foundation base for all the tool kits, instruments, and methods adopted in the whole Heritage Education Program. It is a project that was implemented through collaboration with Shajarat al-Durr Primary School, in response to the resident’s need to create heritage educational activities for their children in order to strengthen their ties to the area. (Attia, 2022)

The project was for a two-month period starting from February to April 2013, and was funded through private donations. The program involved children from 5th to 6th primary grades who meet weekly with volunteers, who teach them about the area they live in through a methodology of play-based learning. This methodology acts as an interactive learning experience that offers a variety of forms for delivering information and knowledge. These forms include theatrical activities, field trips, sports, drawings, and games such as treasure hunts and jigsaw puzzles. It also encompasses activities such as storytelling, picture collages, and other activities that use arts and crafts as a tool for self-expression, with a special focus on stucco. (Attia, 2022)

The School for Art and Heritage program was Athar Lina’s first step towards building mutual trust with the local community by showing the initiative’s dedication in responding to their needs and recommendations. It was also a main inspiration for Al-Khalifa Summer Camo initiated in 2014. (Attia, 2022)



Jigsaw Puzzle



Local Beans Food Cart - Coloring Game

**Fig.31.** Al-Khalifa Website Plyaful Learning Activities  
Source: (Alkhalifa, n.d.)

#### 13.1.4.2.2. Al-Khalifa Summer Camp

Al-Khalifa Summer Camp was founded in June 2014 in the Al-Khalifa community center for the purpose of developing a sense of ownership of the heritage among the children from an early age and helping them grow as active participants in protecting it. (Attia, 2022)

The community center is a historic building in Al-Khalifa Street, that dates back to the early 20th century and is considered as a safe space for kids. It was selected as a venue for the camp so it can help in achieving the goal of connecting children to their heritage through spending their learning time and experience within the boundaries of its historical sites. (Attia, 2022)

Since 2014, the Community Center has become the main location for hosting the annual camps in the summer period. It has been also considered a focal point for the whole community, where it hosted various activities including cultural events, lectures, workshops, different residents' celebrations, and annual food services.

The camp's program has been running since 2014 in the form of 5 days per week for two months in the summer period, with a free-of-charge fee for the children of Al-Khalifa district. In the period of 2014-2018, the camp was funded through private donations, Athar Lina product line sales, and revenues and funds received from the initiative's various programs and activities. Since 2019, the camp has become part of Athar Lina Heritage Design Thinking School and started its funding journey through the Doros foundation. (Attia, 2022)

The number of children participating in the camp has increased over the years from 25 to approximately 80 children. The camp's success started by expanding by attracting children from other surrounding neighborhoods such as Al Hattaba. This contributed to gaining in-depth knowledge about the context of work, growing trust with the local community, and strengthening the social bonding and communication among the different members of the community and with the initiative's practitioners as well. (Attia, 2022)

#### 13.1.4.2.3. Athar Lina Heritage Design Thinking School

Athar Lina Heritage Design Thinking School (Al Atharlina, 2023) is a four-year project (2018-2022), that is funded by Doros Foundation. The project involves working with craftspeople, designers, artists, and many resident members of Al-Khalifa District, and equipping them with design thinking methodologies, heritage education, and research, which they can use as a foundation base for their work. It aims at utilizing the district's heritage as a tool for creating a contemporary line of products, services, and activities, in which heritage is viewed as a potential source of income. (Attia, 2022)

The Project is named a school as its main component is education. It is built on the experiences of the Athar Lina initiative in heritage education in the Al khalifa district. Athar Lina Heritage Design and thinking school project is composed of three main components. The first is the educational component which splits into multiple educational programs that use heritage as a tool for education. These educational programs include Children's Program (7-13 years old), Youth Program (14 to 18 years old), and Professionals Program (18 to 35 years old). The second component of the project's program contains Heritage Industries including its tangible and intangible programs. And finally, the third and final component is tourism promotion. (Attia, 2022)

The educational program is mainly targeting the kids of the khalifa area, believing that the future is held in the hands of these kids who will be the future generation who will protect and preserve the heritage of the area. Therefore, they must be aware of it and understand their relationship with the heritage, and how they can benefit from it and protect it at the same time.

The project is not only providing schools but also annual events, heritage promotion tours, and public lectures in different fields such as art, design, and architecture. Its new phase is entitled "Heritage Works", which aims at viewing heritage industries as potential career paths for youth and women (Al Atharlina, 2023) of the Al-Khalifa district especially, and that of all of Historic Cairo. (Attia, 2022)

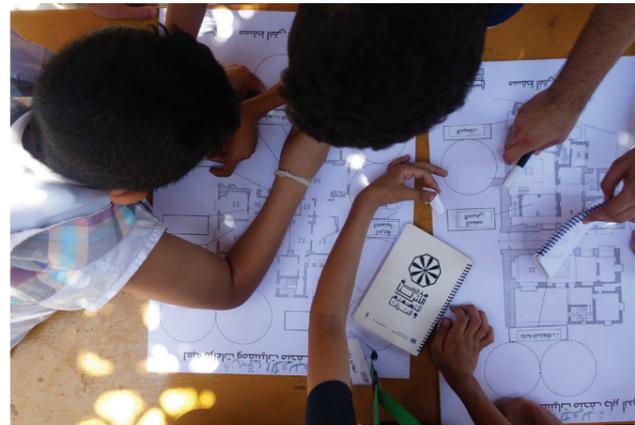


Fig.32. Summer Camp Learning Activities  
Source: (Al Atharlina, 2023)

- **Al-Khalifa Summer Camp**

The children’s program includes Al-Khalifa Summer Camp which initially started in 2014. The summer camp was the first interaction with children as young as 7 – 13 years old. As they are young in age, it makes it easier for them to be integrated smoothly into the summer camp activities. During a six-year period since the initiation of the summer camp program, the activities that were introduced have been developing through time and the teaching techniques using different modules have been growing as well, alongside the children who were also getting older. (Attia, 2022)

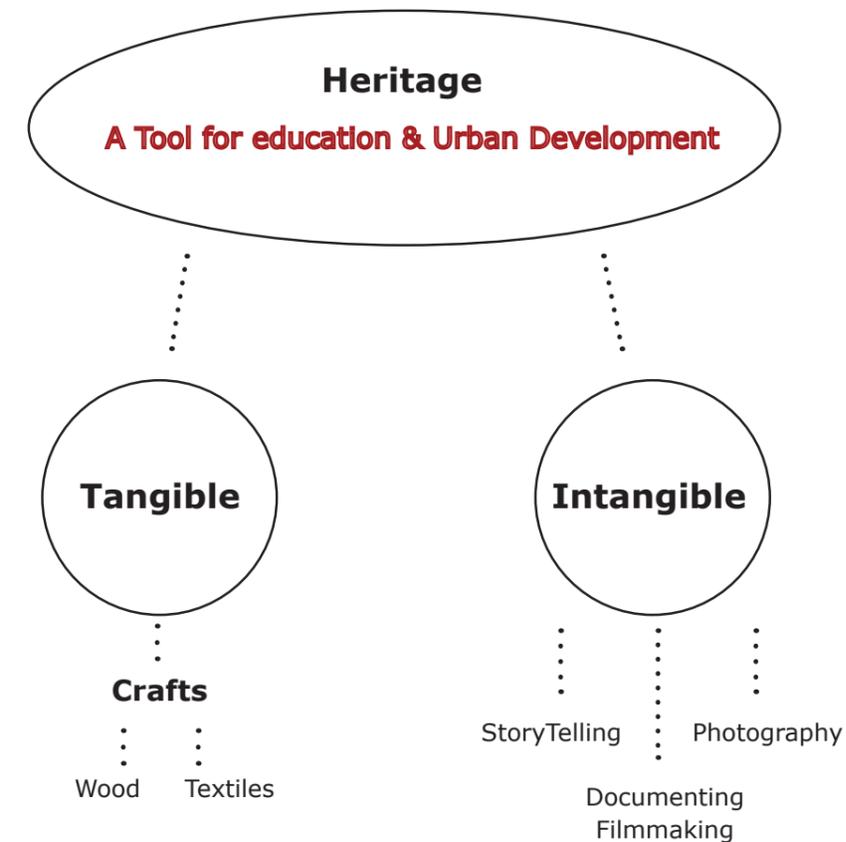
The process moved from only raising awareness about heritage to teaching children about how to look at it and interact with it. When they listen to a story, hear a song or a myth, visit a monument, or see a motif, it’s always important to be aware of the ways to interact with it. For this reason, the school was not intended to be a crafts school but a design-thinking school. (Attia, 2022)



**Fig.33.** Summer Camp Learning Activities - Kid’s Learning through Architecture  
Source: (Alkhalifa, n.d.)

- **Heritage Industries**

The Heritage Design Thinking School is a place for children to learn how to look at the product. The teaching method or the craft itself is a tool to teach the kid about the ways of thinking and not just as a final product. Heritage industries don’t need to be crafts, but crafts are a part of it. When we speak about heritage-related industries, we can speak about crafts, tourism promotion, heritage education, or monument conservation. We can consider the possibility of being a conservator or an Architect working on restoring an urban development in a historically rich and culturally unique area. All of which, lie within the scope of heritage industries.



**Fig.34.** Heritage As a tool for Education & Urban Development  
Diagram Created by the Author

In the school’s first season, the educational programs were designed to make sure that it was a combination of tangible heritage including various crafts such as woodcraft and textile. In terms of intangible heritage, it focused on storytelling and the fundamentals of photography and documentary filmmaking as well as modules related to research and design thinking. (Attia, 2022)

During the pandemic, there was an urgent need to rethink the ways of designing and implementing educational modules. As a result, the physical spaces were moved to a virtual one. Various arenas such as WhatsApp and zoom became the two main modes of communication between the youth and the school. Three main programs were introduced, one program was designed for Women, and two programs for the youth. (examples of lessons: natural light) At the end of the program, the graduation projects were under the theme of “Love letters to Al-Khalifa”. (Attia, 2022)

- **Professional's Program**

After the first season and the experience of the pandemic, there was a necessity of reassessing and rethinking the learning modules and the teaching methods. For this reason, the Professional's program started to create short workshops for professionals, and each workshop would be related to a specific topic related to either tangible or intangible heritage. (ie; storytelling workshop – attendees were interested in learning different fundamentals and techniques related to storytelling. They learned stories about the Al-Khalifa district and how they can repurpose these stories to create complete performances. The second workshop focused on the fundamentals of wood restoration and how to interact with wood as a material specifically in the conservation context, while the third workshop focused on working with stucco, a material that is not only used in conservation settings but is also used in contemporary contexts. (Attia, 2022)

- **Technology in Heritage Preservation Education (using Augmented reality)**

One of the professional workshops in the second season was run by Trainer Agnes Michalzcyk. Implementing a series of murals around Al-Khalifa that narrate stories from daily life in the area. The outcomes of this workshop were linked with other murals created by Agnes to develop a self-guided tour around Al-Khalifa that can be easily accessed by anyone through the mobile application and the map, where they can visit the murals and tell the stories from Al-Khalifa in new and creative ways. (Attia, 2022)

- **The Youth Program**

It began with referring the participants to the basics of design thinking, and how we can start linking it to oral heritage and history; From that "Esmaa Al zaffa" (Listen to the procession) Program was initiated. (Attia, 2022)

In this program, youth learned about the essence of oral history, and they put together small projects related to the idea of the mawlid procession specifically. They were also joined by two participants from the professional programs who took part in the Augmented reality workshop. (Artists who produced spectacular outcomes from the workshop) so they were able to utilize these skills to help the youth actualize their ideas which can now be seen in AL-Khalifa street. (Attia, 2022)

This a clear example of how Athar Lina programs can intersect, and how this intersection and interaction have a great impact on the community development and creative skills.

After "Esmaa Al Zaffa", the youth were split into two, one group was interested in paper crafts and learning the different skills required to create paper products. At the same time, the ones who were interested in woodwork began learning more about woodcraft.

They learned how to produce simple products by mixing wood and other materials they can use for inlay. (Attia, 2022)

One of the things that reflects the school's philosophy in the educational program is the "Makanuna Workshop" (Our Place). It focused on teaching a new perspective in looking at open playing spaces and how they can work to improve them. As a result, they began looking at garbage, and how we can categorize garbage into different materials and components. They started to discuss the uses that can come out of these materials and how they can be used to develop open playing spaces. From there, they started being taught the basics of design thinking. (Attia, 2022)

The last module was focused on theater. The youth started learning new techniques related to public speaking and presentation and how they can use different means of expressing themselves. (Attia, 2022)

One of the things this school helped with achieving is creating a network of designers and craftsmen who have been a part of the programs in one way or another. Whether they were participants in some programs or involved in something specific, and were able to come back to it with a new and fresh mindset that helped the school develop certain aspects. (Attia, 2022)

Graduates of the first season of the Athar Lina Heritage Design Thinking School came back to work within the school and help maintain this approach and provide a continuity of this effort, where they can be active in implementing activities that will benefit the locals in the area, and in that sense, they turn from participants to initiators. (Attia, 2022)

The aim of the schools in the future is to work with their participants in a focused and specific way to professionally equip them for the job market. This would not have been possible without the relationship that was built in 2012 on trust between Athar Lina and the community through the various community activities with kids or their parents who found that these activities meet their needs for the betterment of their neighborhood and community. (Attia, 2022)

This kind of education and approach creates a sense of belonging and ownership, where it utilizes space and history to build and develop a creative mindset and explore the different capabilities of future generations.

The project is called a school, but actually, it is bigger than the concept of our regular schools, where it manages all of the heritage awareness and tourism promotion activities that are run by Athar Lina. Athar Lina initiative doesn't view the schools as something separate from it. In fact, all of its activities feed into other Athar Lina Activities.

The Athar Lina Heritage Design Thinking School is the intersection between all of the community work, education promotion, heritage industries, and heritage education and awareness education in the Athar Lina Initiative has been taking part since 2012.



Shajar al - Durr Pendant



Shajar al -Durr Mausoleum - Pendant Inspiration

Fig.35. Athar Lina Product Line - Copper Crafts  
Source: (Alkhalifa, n.d.)

### 13.2. Conclusion

Megawra - BEC how it utilized its field of urban and architecture practice including all its aspects in the educational process, and uses it as a tool for teaching different kinds of subjects and skills that are applied through exercises with an architectural and urban scope. It implements this through heritage-based curriculums in subjects such as Arabic and English where all reading material is based on the history of the area. It also encompasses other subjects like mathematics, where children understand the mathematical basics through their learning of how to build a dome.

They are also adopting the play-based learning methodology for children to teach them about the many aspects of their neighborhood heritage, through different virtual and physical games, that vary from Online Jigsaw puzzles, Model making, coloring games, Play Kit: Seven Benefits of Travel, etc.

Megawra - BEC's work throughout the years and its programs and activities applied through its Athar Lina initiative have proved that professional practice entities of any field can utilize this field knowledge and develop curriculums based on playful activities and programs that can offer children more attractive and creative learning experiences. This will provide them with the maximum exposure they need from the very beginning, so they can choose their field of interest and create their own path for their future career goals.

### 14. Public Learning Environments

As previously mentioned in Chapter two, Urban Public spaces have an essential role in supporting the learning process, especially in communities that are not so resourceful and have a lack of ease of access to educational and learning platforms. They act as both an alternative interactive learning environment and an active communal space that can host different activities and social gatherings. These learning settings offer a variety of possibilities, where they can be an extension for schools and/or an easily accessed and open substitute for educational institutions. They can host all of these possibilities and more, only if equipped with all the needed facilities and characteristics for a healthier and fulfilling learning platform.

In the following examples, we are going to discuss different real applications for public learning environments, or in other words educational landscapes, where we will explore outdoor and indoor ones, as well as virtual and physical ones.

### Key Elements for Effective Learning Environment

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

## 14.1. Virtual Public Educational Landscapes

### 14.1.1. Google Expeditions Application

**Scale: Universal**  
**Space: Virtual Environment – Public**  
**Function: Educational**  
**Actors: Google – Private**  
**Approach: Bottom-up**  
**Aspects: Virtual Interactive Learning**

Google Expedition is a free mobile application that was created in 2015 to allow students and all learners to explore the world through interactive virtual trips using digital devices. It provides endless possibilities for students or any age group, to explore different environments whether under the ocean, on a trip to Mars or in space, inside the human body, or to any place around the world, they can use Google expeditions to go anywhere and at any time. (Science Museum Group, n.d.)

Teachers can also create their own virtual tours to guide students to certain experiences from their personal experience. The application is very informative as it provides information related to the tour you are exploring (i.e. Architectural style of buildings, History, Scientific facts, Natural phenomena, Galaxies and space, etc ..). (Byrne, 2018)

The application provides more than 500 expeditions that are freely available for its users and offered in two modes: Guide (teacher) & Explorer (student). These expeditions are viewed by users in 3D using their Google Cardboard viewers with the device inside. They are also offered in the form of panoramic scenes, notes, and discussion questions. (Google For Education, 2016)

By adopting such technologies in our learning methods, our learning experiences will have a more positive impact. Learners will obtain several benefits that include offering immersive learning experiences to places that learners may not have the possibility of ever seeing, engaging students in more interactive and multi-sensory learning experiences, and removing the time and place constraints for exploring different realities and fields of knowledge.



Fig.36. Google Cardboard Viewer  
Source: (VirtuARealities, n.d.)

## 14.1.2. The Minecraft Edu Platform

**Scale: City**  
**Space: Virtual Environment – Public**  
**Function: Educational**  
**Actors: Microsoft – Private**  
**Approach: Bottom-up**  
**Aspects: Virtual Interactive Game-based Learning**

Minecraft Edu is a platform that allows students to use games as a tool for learning different subjects through the famous video game “Minecraft”. These subjects include science, math, language, art, and history.

It offers a variety of educational games, in which students are exposed to different horizons, from building up spaces, choosing materials according to their function, and placing them where it fits. It enables them to learn the know-how of things and understand reason and function.

Minecraft has been recently introduced as a tool for teaching kids a variety of things while offering excitement to the learning experience in the classrooms in contrast with the traditional ways. It allows kids to play, communicate, explore and learn.

Games, when put in the right environments, can help children learn to be more generous, kind, empathetic, socially and emotionally intelligent, and a various sets of skills. They can learn their points of weakness and strength and how to support each other. They can understand that everything is not just about winning or losing, but there can be a lot of many things to experience, learn, earn, and accomplish throughout their journey whether in the game or in reality.

*“The game is made of retro graphics and simple geometrical forms that allowed the game to have an amount of depth. A landscape of blocks”* (TED-Ed Educator Talks, 2019) Children when playing this game, are allowed to shape the world in any way they imagine. They can create different geometries and build various spaces using all kinds of resources from stones to cutting trees for construction and much more. They can also experience different adventures of hunting treasures fighting monsters or even taming animals. These various possibilities can open up the imagination of a child and boost his creative skills.

Minecraft teaches children how to build and construct, where they can build their own world with creativity and ingenuity. The game exposes them to different situations where they can analyze and think of possible solutions and strategies to overcome obstacles and challenges. They can also discuss some solutions within themselves or with others, or even research them online. This helps them to develop different skills and abilities in relation to various fields, for example, they use math to rationalize the use of their supplies and resources. The game also supports the communication

### Key Elements for Effective Learning Environment

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and interaction of parents with their children as they can play with them and share their learning journey together.

Minecraft has endless possibilities for learning and exploration. Children can learn many other things such as how to grow, replant, build, manage, create, share, organize, debate, rationalize, and much more. They can understand various topics, experience various attitudes, and broaden their awareness of boundaries and space.

Joel Levin – an educator and software developer of MinecraftEdu Platform – Words in a TED-Ed Educator Talks:

*“Minecraft can be used as a tool for teaching and learning any subject. For example: Literacy teachers had students write about their Minecraft experience, and History teachers used the game to recreate the ancient worlds where the kids could meet historical characters. Science teachers had the students design experiments to probe Minecraft’s version of gravity, chemistry, or even genetics. It has a lot of potential for endless educational possibilities and experiences. There are some topics that are hard to teach, like how to teach a child to be empathetic, to make him learn more about conservation or civic engagement, and a game like Minecraft has an approach to this problem.”* (TED-Ed Educator Talks, 2019)

He also talked about a workshop where he used Minecraft as a tool to explore the social dynamics within the Hunger Games. “We started dividing the students into two teams based on the oppressive class system in the book and the politics in the novel. One team had access to food, weapons, and various forms of wealth and power where they lived in comfort and safety.

The other group was forced to work harder doing more dangerous tasks, and yet they lived in poverty and there was never quite enough food to go around.

“The catch is that there was a hidden interdependence in this relationship. Neither group could survive completely on their own. They needed to trade with each other. And it was fascinating to watch the kids play out these various power struggles in this little microcosm world that we created for them.

.. the end results didn’t matter all that much. What really matters is the experience. We wanted the kids to explore the injustice in this system we had created for them. We wanted them to know what it was like to try to function in a society where there was not enough to go around, and where people abused power. .. we would always end the workshop with a discussion. We would have the most illuminating conversations. And the kids were really able to connect their experiences in the game with all kinds of real-world topics. They would bring up issues in their own lives about violence, poverty, and equity.

For instance, one time during these discussions, after the game session, one of four players who was playing on the oppressed team was accused of stealing from his fellow teammates and even attacking them. There was a lot of tension in the room. And I’ll never forget how he responded. He said that” when I realized I was powerless to change my own situation, I lashed out at the people who were closest to me.” Game scenarios like this can help the kids understand the complex interactions between different groups of people in our society, or reflect on their own experiences.

When a game is flexible enough to present these different real-world situations, when it’s a game that kids are excited to play in school when it’s brought into an educational setting with the context, curation, and reflection that a teacher can help provide, amazing things can happen. Games help people learn fun. And they provide teachers like me novel ways to connect with our students and provide experiences that would not be possible any other way”. (TED-Ed Educator Talks, 2019)



Landscape of Blocks - Various activities



Creation of Real-world Situation & Environments

Fig.37. MinecraftEdu Platform Video Game  
Source: (TED-Ed Educator Talks, 2019)

**In conclusion** to “The Minecraft Teacher” words and the analogy of the MinecraftEdu Platform methodology, we find that this videogame acts as a powerful tool for learning. It can be considered as the digital version of playful learning landscapes that can help transform our learning experiences into more interesting, interactive, and engaging ones. It provides the possibility of learning through experience and relating to real-world situations and complexities. It helps learners acquire and develop the ability to think creatively, solve innovatively, and communicate effectively. As a result of using such approaches and providing more innovative platforms such as that of MinecraftEdu, we contribute to improving our learning methods and experiences, so that we can ensure a better outcome for future generations that can face the various complexities of the world.

**Key Elements for Effective Learning Environment**

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

**14.2. Physical Public Educational Landscapes**

**14.2.1. The City of Sciences and Industry Museum, Paris, France**

**Scale: Urban Space**  
**Space: Physical Environment – Public**  
**Function: Educational**  
**Actors: French Government – Public**  
**Approach: Top-Down**  
**Aspects: Physical Interactive Playful Learning**

The “Cité des Sciences et de l’Industrie” is a science museum that was founded in 1986 as a symbol for modern technology, and it is located in one of the largest parks in Paris “Parc de la Villette”. “The City of Science and Industry” is the largest science museum in Europe, which offers the opportunity to explore science secrets and discoveries through its various interactive experiences. It provides these experiences to the visitors whether children or adults within its outdoor educational spaces. It allows them to engage in its program of activities, events, workshops, experiments, conferences, lectures, and interactive exhibits of many scientific disciplines such as physics, biology, or astronomy. (VisitParisRegion, n.d.)

The museum acts as an accessible educational venue for all types of users and ages with a focus on science and technology. The venue as a physical space is composed of different floor levels, where each level hosts a combination of temporary exhibitions and permanent spaces. These floors allow the opportunity to explore things such as the human brain, the history of our planet, future energy and transport systems, or the solar system. (VisitParisRegion, n.d.)

It also offers online resources (i.e. Juniors Site) which is dedicated to older children, preteens, and young teenagers who are interested in topics such as science, games, films, and interactive experiments. These resources include various learning experiences such as Mathematics, chemistry, physics, Life and earth sciences, the human body and health, arts, science and society, life in the middle ages, agriculture and food, environment and sustainable development, as well as evolution and other learning opportunities. (VisitParisRegion, n.d.)

The museum is also famous for its specific focus on children’s education and development through playful activities embedded within its various spaces. “The City of Children” is a program made specifically for children learning so they can have adult-like experiences. (VisitParisRegion, n.d.)

**14.2.1.1. The city of Children**

“The Cité des enfants” or “The City of Children” is a program that is composed of two exhibition categories for children aged 2-7 and 5-12 years old. It is offered on-site in the museum or through a pdf manual manipulated to allow families to experience the same activities with equipment at hand at home. (Cité des sciences et de l’industrie, n.d.)

**2 – 7 Years Old Program**

The 2-7-year-old exhibition is organized over a total area of 1700 m<sup>2</sup> and is composed of five thematic zones that are split into two categories. The first three zones – I discover myself, I know how to do, I find myself – are focused mainly on the development of the child’s physical and cognitive abilities, and his spatial awareness, while the other two – I experiment, All together – provide him the opportunity of exposure to the surrounding environment, people, and the world. (Cité des sciences et de l’industrie, n.d.)

The program includes adults and parental participation within its spaces, as this will help the child’s progress, and also allow adults to encourage their children, play with them, and observe them at the same time. It also pays special attention to all disabled public users and their companions by offering many activities that are accessible to people with different kinds of disabilities. We will go through the five thematic zones elaboration to identify the specific features of building these spaces for the purpose of children’s learning and development. (Cité des sciences et de l’industrie, n.d.)

**1. I Discover Myself**

In this spatial zone, children discover who they are and construct their physical, mental, and social identities. This process takes place through 5 blocks: (Cité des sciences et de l’industrie, n.d.)

- My Body:** Here, a child will learn what looks like from every angle, in detail or as a whole, in profile, or from behind. (Cité des sciences et de l’industrie, n.d.)
- My Abilities:** A child will experience and develop his senses. He will understand the complexities that disabled people experience whether they suffer the loss of one or more of their senses. (Cité des sciences et de l’industrie, n.d.)
- My Emotions:** The children enter something called the little cabins. Each cabin represents one of the common emotions: joy, sadness, rage, fear, and more. This helps children to identify the different emotions they experience and recognize that of others as well, so they can better communicate with sensibility and care for other people as they care for themselves. (Cité des sciences et de l’industrie, n.d.)
- Grow:** The child explores various objects of different sizes, so it can allow him to measure himself and understand the scale of objects and people in relevance to his body size as he grows overtime. (Cité des sciences et de l’industrie, n.d.)



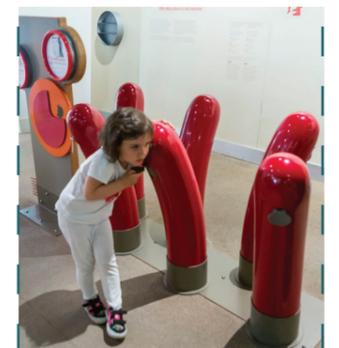
The Size Of Hands



Test your Flexibility



Measure up



The Large Mirrors

Fig.38. I Discover Myself Zone

Source: (Cité des sciences et de l’industrie, n.d.)



Pinball Machine



Decorate the Special Ship



Screw - Unscrew



The Fans of the Special Vessel



Special Ship Electrical Circuit



The Gears of the Special Vessel

Fig.39. I Know How To Do Zone

Source: (Cité des sciences et de l'industrie, n.d.)

□ **My Surroundings:** "My Entourage" is a block that helps the child build his social identity and personality through the use of multimedia. He creates a virtual character that he observes and watches living and growing in an environment that encompasses all his loved ones. (Cité des sciences et de l'industrie, n.d.)

## 2. I Know How to Do

This is an island where a child can develop his cognitive abilities and build his perception with a better understanding of the world. He does this through the manipulation of objects, tools, symbols, and words. This theme offers the child new activities and games that are designed and implemented for the sole purpose of his development. (Cité des sciences et de l'industrie, n.d.)

□ **Pinball Machine:** Through this game of playing with ball machines, a child draws the relation between action and result. He learns this through the pinball game, where he understands the link between placing a ball in a specific position and the place where it comes out. (Cité des sciences et de l'industrie, n.d.)

□ **The Special Ship:** Children go through the different phases of managing a ship, where they work collaboratively or alone on its building and repairing processes, decoration, driving, and operation. This helps them to recognize their innovation, imagination, and perception while identifying their scope of interest throughout the whole process. (Cité des sciences et de l'industrie, n.d.)

○ **Build and Repair:** Through the use of tools (screws, screwdrivers, wrenches), children are able to add or remove decorative elements from the back of the ship structure, or open and close spaces at the front.

○ **Decorate:** Children are able to create decorative pieces for the wheels of the special vessel. They do this using two digital drawing stations, where they can freely draw, and select patterns and colors. After validating their creations, they are projected on the wheel on a monumental scale. This projection is interactive and reacts to the passage of children.

○ **Acting on Machines:** Here, children can interact with the wheels, gears, pulleys, fans, and sail within the machine room of the special ship.

○ **Driving:** Children become captains of the ship where they manage the steering wheel and two telescopes on the deck of the craft and manipulate various controls of a large dashboard in the cabin below.

○ **Imagine-Draw:** Children explore the different stages of the construction and engineering of an object. They start discovering the design stages of the special vessel through a puzzle of plans. This process makes them understand more about the concept of planning and develop their logical reasoning. (Cité des sciences et de l'industrie, n.d.)

## 3. I Find Myself

The 5 islands of this zone are designed to support the child's intellectual development by exploring and moving through the different spaces while understanding the meaning of space appropriation. This helps him master his motor skills, linguistic abilities, and the notion of time. (Cité des sciences et de l'industrie, n.d.)

□ **The Course of the Little Ones:** Kids explore the spaces using their bodies through different types of movement, crawling, moving forward, backward, and other types that help them develop their motor skills.

□ **The Journey of the Greats:** A complex course of scattered pitfalls that kids try to overcome while feeling joy and greatness.

□ **The Maze:** Children go through a labyrinth of low height walls, so they don't feel afraid while trying to orient themselves using different landmarks to find their way out.

□ **Big Folds:** Through the manipulation of different geometric shapes, children try to create volumes that are relevant to their scale and can use as a shelter.

□ **The Right Point of View:** A game that children must take on the correct point of view, so that they can see clearly the shape of an animal according to the principal of anamorphosis. (Cité des sciences et de l'industrie, n.d.)

## 4. All Together

The "All Together" theme zone is intended to allow the child to interact with other children of his age, so they can exchange knowledge, thoughts, and ideas, and be able to build their social identity through observation, arguments, and a cooperative work process. The zone is composed of 3 large blocks: (Cité des sciences et de l'industrie, n.d.)

□ **The Worksite of the Little Ones:** In this block, children of ages 2-3 years old are gathered wearing their helmets and vests to work together on building a house.

□ **The Construction Site of the Big Ones:** For ages of 4-7 years old, children perform the construction process in a more real-like conditions, where they transport bricks in wagons and use cranes to mount them.

□ **The Circus:** Here, children perform different circus acts, which they show and share with an adult audience. (Cité des sciences et de l'industrie, n.d.)

## 5. I Experiment

As children are always exploring and curious to know more about things and the phenomena they see around and observe; In this zone, they are allowed to experiment more and be properly introduced to the scientific approach. The "I Experiment" theme is divided into three large islands - Water, Air, and Shadow - where they experiment with the properties of each and play with them to deepen their understanding and expand their awareness and perception. (Cité des sciences et de l'industrie, n.d.)



Big Folds - Cabins



Balance



The Maze

Fig.40. I Find Myself

Source: (Cité des sciences et de l'industrie, n.d.)



The Construction Site



The Circus

Fig.41. All Together

Source: (Cité des sciences et de l'industrie, n.d.)



Nine Month to be Born



The Inside of your Body

Fig.42. The Body

Source: (Cité des sciences et de l'industrie, n.d.)



Written in Arabic



Languages of the World

Fig.43. Communicate

Source: (Cité des sciences et de l'industrie, n.d.)

## 5-12 Years Old Program

This exhibition is composed of six spaces that host different games and activities, which support the children's journey of self-discovery, personal growth, and social communication. It will also help them continue their fun and exciting process of knowledge acquisition through the exploration of various scientific and technical phenomena. (Cité des sciences et de l'industrie, n.d.)

### 1. The Body

The first space allows them to discover the secrets their bodies hold within and the many abilities they can offer. They start exploring this impressive machine through different activities that are included in three categories: observing their bodies from every angle (Listening to their heart, Measure yourself, Race with the skeleton, Look inside the body, Nine months to be born, From embryo to fetus), testing their physical abilities (Measure your speed, Test your reflexes, Keep your balance, Touch without seeing), and finally manipulating their external appearances (Change of face, Funny mirrors, A face for two). These activities allow them to explore the different possibilities so that they can build their identity and decide who they are while growing up. (Cité des sciences et de l'industrie, n.d.)

### 2. Communicate

In this space, children learn and acquire the fundamental skills of social communication, they do this in various ways that seem primitive and not up-to-date, but they are considered the basic tools and means of successful communication in real life. Children in this area are not using technological means to connect with others, but they rather experience using other basic methods like writing, speaking, and language which will help structure their thinking. These means of communication include whispering, making signs, writing in different languages (Arabic, Chinese), and interpreting drawings. (Cité des sciences et de l'industrie, n.d.)

### 3. The Tv Studio

"The TV Studio" is a space where children experience the process behind making TV and cinematic images that they often see. They can understand this through different games that include presenting television news using a teleprompter, moving a camera on a trolley to create a cinematic scene, filming or being filmed, and many other activities. (Cité des sciences et de l'industrie, n.d.)

### 4. The Garden

In "The Garden", children experience curiosity and its advantage for learning more and knowing more about the world around them. They start observing insects as ants in a real anthill, butterflies through the different evolution phases (eggs, caterpillars, cocoons, flying butterflies), and understand the mystery of the different seasons in the astronomy cabin. (Cité des sciences et de l'industrie, n.d.)

### 5. The Water Games

Water games in this space are the main tool for educating children about the different properties of water and its various useful methods of application. Children start experimenting with water on different levels that stimulate their scientific curiosity. They play games such as pushing balls with water jets, pumping water in different ways, building dams, or making air bubbles rise in a liquid. (Cité des sciences et de l'industrie, n.d.)

### 6. Factory

This space allows children to experience the different processes and technicalities behind producing objects and products that we use on a daily basis. These objects and products, such as cardboard boxes, are manufactured in factories, and children in the "Factory" space will learn how to use machines, produce forms of energy as electricity by spinning wind turbines, and determine which one is more efficient to make these machines work. (Cité des sciences et de l'industrie, n.d.)

**In conclusion**, the concept of "The City of Children" is an innovative approach to the transformation of public spaces into learning platforms. The educational program of the science museum is tailoring its experience to children's need for self-development and personal growth. It provides an interactive learning experience on different science topics with the use of technology while offering children the opportunity to explore, discover, and the learn-by-doing approach with hands-on activities. This experiential experience promotes children's passion for lifelong learning, curiosity for understanding, and eagerness to conquer new worlds of knowledge. The program's different innovative exhibits and spaces prove that public spaces are a concrete foundation for providing attractive, creative, and engaging learning experiences that will help shape the minds and abilities of the future generation.



We Are Shooting

Fig.44. The TV Studio

Source: (Cité des sciences et de l'industrie, n.d.)



The Butterfly Greenhouse

Fig.45. The Garden

Source: (Cité des sciences et de l'industrie, n.d.)



Dams



Throwing Balls

Fig.46. The Water Games

Source: (Cité des sciences et de l'industrie, n.d.)



Pilot the Robot

Fig.47. Factory

Source: (Cité des sciences et de l'industrie, n.d.)

**Key Elements for Effective Learning Environment**

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized

**14.2.2. Urban Thinkscape - Bus Stop, Belmont Neighborhood, Philadelphia, USA**

**Scale: Urban Area**  
**Space: Physical Environment - Public**  
**Function: Educational**  
**Actors: Playful Learning Landscapes Initiative - Private**  
**Approach: Bottom-Up**  
**Aspects: Physical Interactive Playful Learning**

**14.2.2.1. Overview**

Urban Thinkscape initially started as a collaborative research effort between the University of Delaware and Drexel University, led by Dr. Roberta Michnick Golinkoff. The research's main aim is to create interactive and educational public spaces for children within our urban environments, so it transforms them into learning platforms where learning is fueled through play. The Urban Thinkscape project is a pilot intervention project that reimagines a bus stop in an undersourced area in Philadelphia, USA. The project is implemented through a process of two years by the "Playful Learning Landscapes" initiative. The intervention is a co-creation working hand in hand with the local community and associations such as the neighborhood's "Belmont Alliance Civic Association", as well as working closely with the Frontiers of Innovation (FOI) leadership team at Harvard university as they developed their theory for change. It transforms its everyday basic use from a place to wait and ride into a point of interaction between children, parents, and caregivers within their neighborhood. The project has received funding from various sources of public and private entities, including government agencies, foundations, and private donors. (Center on the Developing Child at Harvard University, 2020)

The "Playful Learning Landscapes" initiative targets different types of public spaces in its projects. Its main aim is to transform cities into playful learning centers that offer a variety of educational opportunities for children at any time. Their main purpose is to turn the neighborhood spaces into playful learning ones, where children can acquire knowledge and skills on different subjects while having fun and playing with their peers and parents. (Playful Learning Landscapes Action Network, 2021) They can make the best use of their time and develop constantly, so they are prepared for future challenges and ready for success.

The first Playful Learning Landscapes project - the Ultimate Block Party - was an event that took place in Central Park in 2010 and it had around 50,000 participants who engaged in 28 playful learning activities. Urban Thinkscape takes the approach of the Ultimate Block Party event and extends it into the community itself placing it where people normally go and wait rather than to a certain destination. (ChangeX, n.d.)



**Fig.48.** Urban Thinkscape Playful Learning Activities - Bus Stop Platform  
 Source: (Playful Learning Landscapes Action Network, 2021)

**14.2.2.2. Objective**

The project's aim is to encourage the idea of transforming our public spaces into interactive and playful learning environments that support STEM and language learning for children. This acts as an attempt to encourage and increase the interaction and discourse between caregivers, parents, and children through the concept of playful learning landscapes while helping children to develop academic and core skills in their daily basis playful activities. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)

The project purpose of selecting an undersourced area is that communities that live in these environments suffer from the unease of access to quality education, which in turn creates an academic gap between them and their higher-income peers. This gap is reflected in lower college attendance and school completion. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)

The project program is a result of a collaborative design process between architects, psychologists, city planners, local civic associations, and community members, for the sole purpose of transforming neighborhood spaces and structures into learning environments that can stimulate the development of spatial, language, and socioemotional skills. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)

Public funds are usually directed to investing in school properties, while in western countries, about 80% of the children's time during their wake hours is spent outside classrooms, whether in public spaces or at home. This large amount of time can be utilized to help the child develop and learn in places that are not traditionally considered as informal settings for learning. These spaces are where daily-basis interactions usually take place among the different community members. These settings can vary between bus stops, the corner market, sidewalks, and much more, that can support this purpose. By adopting this methodology in targeting this kind of public spots, children and adults can interact through playing and talking for the purpose of stimulating constant learning and development in the middle of the many day-to-day activities. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)



**Fig.49.** Urban Thinkscape Signage  
Source: (Playful Learning Landscapes Action Network, 2021)

Moreover, Lower-income families are more likely to use public transportation than their high-income peers. For this reason, the selection of a bus stop as a location for the project was a good match for the better utilization of the community-use public spaces. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)



**Fig.50.** Urban Thinkscape - Bus Stop Platform  
Source: (Playful Learning Landscapes Action Network, 2021)

### 14.2.2.3. Location

Philadelphia is the poorest largest city in the US with a poverty rate of 26%.

This makes it a perfect match for the Urban Thinkscape Project as its main criteria for selecting the neighborhood was that: (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)

1. 50 % of the residents live below poverty line.
2. Identifying an area that is in need for accessible play spaces.
3. The presence of community organizations. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)

This criterion helped to provide a spatial experience that promotes interaction among caregivers and children in low-income environments while offering learning opportunities that will develop literacy and mathematical skills, which in turn will reflect on better cognitive outcomes. The presence of these organizations in the community helped the initiative in selecting the site location of the project, providing guidance in navigating local politics, and support in the development of a plan that can ensure community engagement and participation in the process of design and implementation of Urban Thinkscape, and finally help in the publicity of the project. (Hassinger-Das, Palti, Hirsh-Pasek, & Golinkoff, 2019)



**Fig.51.** Urban Thinkscape  
Source: (Playful Learning Landscapes Action Network, 2021)

#### 14.2.2.4. Physical Space Design

Urban Thinkscape’s design of the physical activities in the bus stop platform was created for the purpose of providing a learning context that is interactive, engaging, and socially connective. These activities included four installations: Puzzle Bench, Jumping Feet, Stories, and Hidden Figures. The elements of the installations were designed to stimulate conversations on topics and skills related to child readiness for school. It included topics like science, math, engineering, and technology while offering support to children’s learning experiences at home and in schools.

- **Puzzle Bench:** It is composed of four different puzzles that are installed on the back wall of the bus stop in the shape of rounded metal tubes with designs inspired by the neighborhood. Passengers of children and adults are challenged to complete these puzzles while waiting for their rides, where these activities help them develop their mathematical and spatial skills. (Center on the Developing Child at Harvard University, 2020)
- **Stories:** This activity is a wooden platform that is designed in the form of triangular facets with different icons placed on it. These facets have different sloped levels that children climb to tell different stories. The icons on the wooden surfaces are designed according to a set of standardized pictures and symbols that are used with children that has developmental difficulties in the speech, hearing, and language aspects. This helps to ensure that these activities are accessible to everyone. The purpose of this installation is to support children in building their narrative and social-emotional skills, which impact their literacy outcomes. (Center on the Developing Child at Harvard University, 2020)
- **Jumping Feet:** Being the favorite of all other activities, the Jumping Feet is composed of different aligned circles with painted figures of single or double shoeprints. These circular spots are placed on the ground so that children can jump on them following a pattern. This encourages kids to develop executive-functioning skills, which this set of skills control the cognitive process that includes flexibility, planning, and working memory. (Center on the Developing Child at Harvard University, 2020) All these skills have long-term influence on children’s reading and mathematical achievements.
- **Hidden figures:** This one is made up of massive metal sculpture panels that have some images like foods and animals, that are embedded in their metal work pattern, where these figures can be seen from the cast of their shadow on the ground or when a child looks directly up to see them. (Center on the Developing Child at Harvard University, 2020) This helps children to develop their spatial and problem-solving skills, in their process of searching and trying to identify these different hidden figures and shapes.

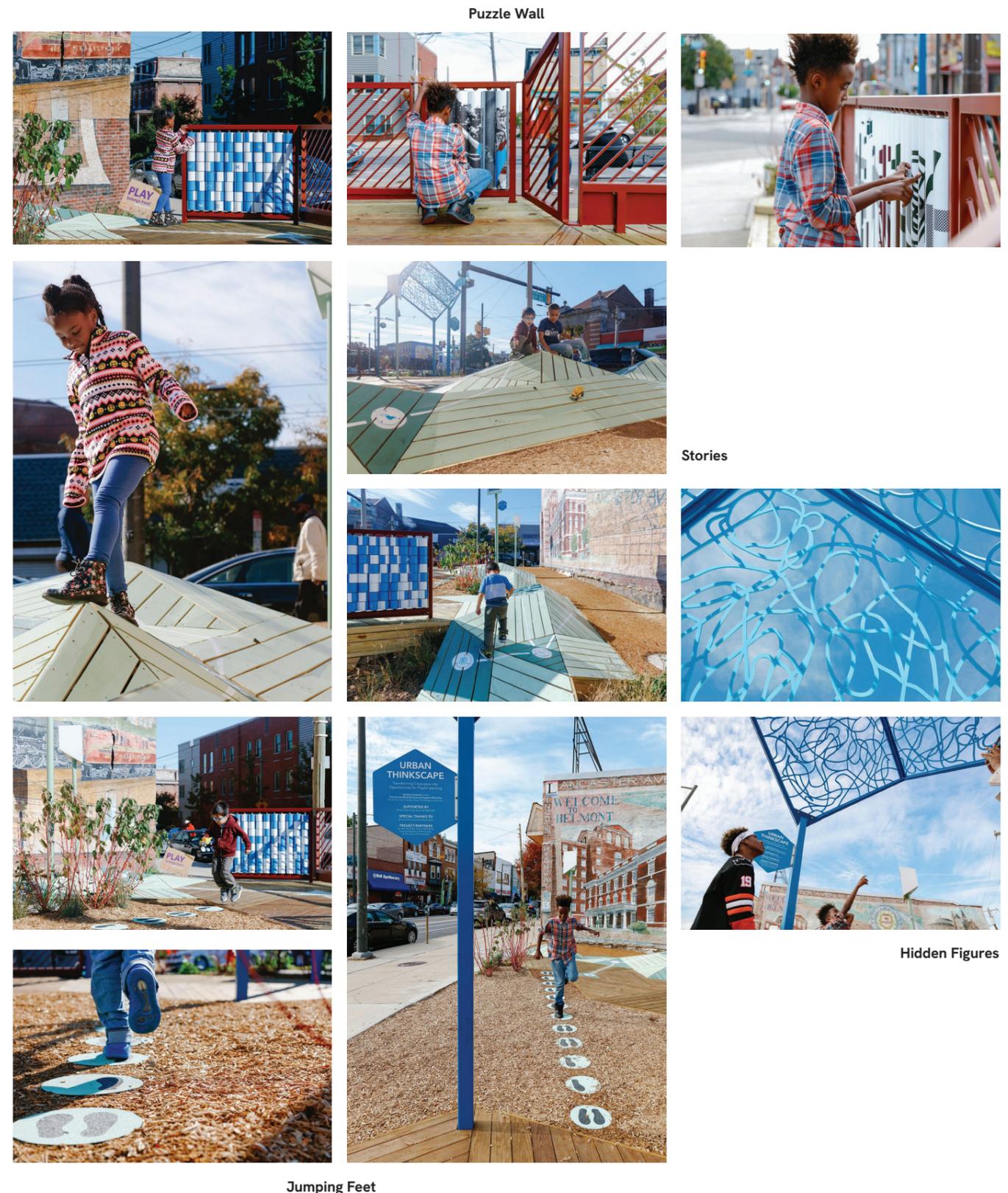


Fig.52. Physical Space Design - Playful Learning Activities  
Source: (Playful Learning Landscapes Action Network, 2021)

Through a group of low-cost activities, the Urban Thinkscape pilot project was able to generate high-quality interactions between children and caregivers within their local urban environment.

Playful Learning Landscapes initiative depends on three main aspects in designing its playful urban learning environments: (Playful Learning Landscapes Action Network, 2021)

1. **How children Learn:** This is composed of 5 Make-It principles: Make-it fun, active, engaging, meaningful, and finally Make-It socially interactive.
2. **What Children Learn:** This illustrates the crucial 6 Cs for children’s development and academic achievement: Collaboration, Communication, Critical Thinking, Creative Innovation, Confidence, and Context.
3. **Community Values:** This refers to the attention and respect that is paid to the cultural preferences, beliefs, and priorities of the community where these playful learning landscapes are being developed and implemented. (Playful Learning Landscapes Action Network, 2021)

By combining all these aspects together, they contribute to a successful outcome that benefits the whole community where these projects are implemented and encourage all learners to seek learning with passion and commitment. As a result of this methodology of work, the Urban Thinkscape project’s success in Belmont, USA made it eager to expand its potential reaching out to other cities around the world, such as Johannesburg, South Africa.

**In conclusion,** Playful learning landscapes are physical proof of how urban environments and space functions can strongly encourage interaction and engagement across the different age groups, for the purpose of learning and social bonding. They achieve this through embedding some of the science of learning principles into the architectural design of spaces.

The Urban Thinscape project is one example of how we can successfully transform any kind of public space function into a variety of learning opportunities that can stimulate child development and promote social interactions among society members of all ages. It is an effective tool for change, in which it emphasizes the power of cities in utilizing their urban public environments for the purpose of bringing communities together with their surroundings and each other, in an opportunity for learning, development, and progress for themselves and whomever they care for. This helps to strengthen the connection of families with public spaces, promotes social awareness, and directs their attention and efforts into utilizing the many potentials of urban public environments into becoming urban platforms that can foster children’s learning and growth.

## 15. The Learning City – Belfast, Northern Ireland, United Kingdom

**Scale: City**  
**Space: Physical Environment – Public**  
**Function: Educational**  
**Actors: Multiple Stakeholders – Public & Private**  
**Approach: Top-Down / Bottom-Up**  
**Aspects: Inclusive Learning City**

### 15.1. The UNESCO Definition of a Learning City

For a city to be identified as a learning one by UNESCO, it has to adopt certain elements of action that are defined by UNESCO in the first International Conference on Learning Cities held in Beijing, China in 2013. UNESCO states that a learning city is effectively mobilising its resources in every sector to:

- Promote inclusive learning from basic to higher education (UNESCO Institute for Lifelong Learning, 2014)
- Re-vitalize learning in families and communities (UNESCO Institute for Lifelong Learning, 2014)
- Facilitate learning for and in the workplace (UNESCO Institute for Lifelong Learning, 2014)
- Extend the use of modern learning technologies (UNESCO Institute for Lifelong Learning, 2014)
- Enhance quality and excellence in learning (UNESCO Institute for Lifelong Learning, 2014)
- Foster a culture of learning throughout life. ((UNESCO Institute for Lifelong Learning, 2014; United Nations Educational, Scientific and Cultural Organization, 2013)

Implementing these actions will ensure the development and prosperity of the different aspects that include the social, cultural, and economical for all its members at the individual and holistic levels.

We have previously stated that learning cities are ones that facilitate lifelong learning opportunities for all. So, for cities to transform into learning ones they need to set out a framework of key strategies and policies that embed these lifelong learning opportunities everywhere across the city. They also need to support these efforts with a learning charter that can help identify all the obstacles and barriers standing in the way of achieving this goal and form various partnerships among the different sectors, entities, and society members.

### Key Elements for Effective Learning Environment

- Interaction
- Creativity
- Collaboration
- Synergy
- Real World
- Open Access
- Inclusive
- Technology
- Safety
- Playful
- Dynamic
- Personalized



## 15.2. Belfast – from a regular city to a Learning City

Belfast is the largest city and the capital of Northern Ireland. It has suffered from a violent history since the 1970s, which led to a division in its community and affected its overall development. In 1998 a partnership entitled “Belfast Partnership Board” was established among a wide range of stakeholders for the purpose of bringing this divided city together. It aims at achieving this through a common platform of strategies, policies, and shared responsibilities towards reducing inequalities, improving the overall wellbeing of individuals, and achieving future progress and development for all. (Kumar, & M. S, 2020)

The Belfast Strategic Partnership Board “BSPB” put its collaborative efforts into highlighting all the issues facing the city and its community, while providing a framework of actions for solving them encompassing all four parts of Belfast: North, South, East, and West. This collaborative effort of the various stakeholders was led by the Belfast City Council, Public Health Agency, and Belfast Health and Social Care Trust. It also brought forward the voices of active students and youth into the discussions of the city’s local development plans. (Kumar, & M. S, 2020)

The city was facing several issues and barriers that included life inequalities and weak or lack of access to learning opportunities. These issues took place due to different factors such as poor health, poor support networks, lack of confidence, racism, poverty, prejudice, and discrimination. (Belfast Strategic Partnership, 2015)

The BSPB addressed all these problems by focusing on four main key areas to realize Belfast as a learning city:

1. It sets a framework of strategies to develop lifelong learning opportunities as a main tool to achieve progress in all aspects of life.
2. With this strategic framework, it develops a learning charter for the city that states the objectives and set of actions needed to transform Belfast into a learning city.
3. Develop “Belfast Works” as a set of strategies that demonstrate how the learning charter can work in practice while targeting the disadvantaged people who need personal support to acquire the skills and knowledge required to access the job market.
4. Promoting communication and partnerships among all city sectors and members in different contexts within an environment of easily accessed lifelong learning opportunities for all, can help create a learning culture and a learning city as well. (Belfast Strategic Partnership, 2015)

As a result, Belfast was first declared a Learning City in 2015 and then issued a learning charter to move forward and maintain this progress. The Belfast City Council applied to become a member of the UNESCO Global Network of Learning Cities, which was granted in 2018. Belfast is also a 2021 UNESCO Learning City Awardee. (Kumar, & M. S, 2020)

### 15.2.1.A Learning Charter for Belfast: Belfast a Learning City

This charter is a document of a strategic framework that is issued by the BSP’s Lifelong Learning Thematic Group. It aims at providing all city residents with equal access to lifelong learning opportunities, where it puts learning at the heart of all city forms of life, and at the same time puts all people at the heart of learning. It achieves that by embedding these opportunities in all city aspects and spaces so that it can provide the suitable conditions tailored to their needs for progress and change, and ensure a better quality of life for all. (Belfast Strategic Partnership, 2015) All these opportunities are provided to develop their skills, competencies, and knowledge in the different aspects of life, whether personal, social, or economic.

A collaborative approach among all city organizations to lifelong learning will help fix the different disadvantages through learning development. This will create a vibrant learning community with a strong social bond while increasing their sense of belonging as well as their confidence and resilience. (Belfast Strategic Partnership, 2015)

A communication plan through lifelong learning that emphasizes on certain main Key aspects:

- **Addressing Life Inequalities:** Equal access to lifelong opportunities for everyone at all life stages.
- **Economic:** Raising awareness through lifelong learning and targeting the areas for economic growth with the needed investments.
- **Increase Emotional Resilience and improve quality of life:** Learning as a tool for a better quality of life, and growing the ability to adapt to stressful situations throughout life.
- **Social Inclusion**
- **Skills development in different aspects as well as relevance to employment and job market needs.** (Belfast Strategic Partnership, 2015)

### 15.2.2. Implementing Actions for Lifelong Learning through the community Planning Framework

Under the guidance and efforts of the “Learning and Work Institute” – an independent national policy, research, and development organization dedicated to lifelong learning and full employment to improve adult learning and skills development –, Belfast is achieving significant progress in embedding lifelong learning opportunities within the different platforms and environments to support the approach of Belfast as a Learning City within the Community Planning Framework. The institute elaborates its principles through the annual “Belfast Festival of Learning” program and showcases what a learning city can offer.

- **Belfast Festival of Learning**

The festival aims to engage citizens of different ages in week-long interactive learning events, activities, and workshops. This helps encourage all people, especially the most vulnerable and disadvantaged, to participate in a wide range of learning opportunities that exist across the city of Belfast, tackling inequalities and improving their quality of life. (Learn and Work Institute, 2020)

The theme of the first learning festival in 2016 was “Learning for All”, aiming to put people at the heart of learning while encouraging all citizens to become active learners regardless of their age and background. The Learning activities offered in the festival include a rich mix of song, dance, and arts that contribute to the understanding of the importance of healthy living covering the different dimensions of physical, mental, and emotional resilience. The festival provided other activities and events that highlighted its holistic approach towards learning, in which it targeted employability skills, social diversity respect for all, and the necessity of protecting our environment. (Learn and Work Institute, 2020)

In the 2020 festival, the theme was “Using Learning to Build Resilience”, which focused its activities and events on supporting vulnerable people who feel isolated and boosting their self-confidence. The different themes over the years have always offered learning opportunities with an emphasis on health and well-being, to raise awareness and reduce inequalities while preparing citizens to be able to respond in times of crisis such as that of covid-19. (Learn and Work Institute, 2020) All these efforts have helped create a socially connected society while engaging parents in their child’s learning through events at their children’s schools, and encouraging people to participate in various experiences that help develop different skills for future use and progress.

Learning and Work institute achieves its goal through four main key areas within formal, informal, and non-formal learning settings:

1. Learning for life
2. Learning for Education
3. Learning for and in Work
4. Learning to Live Together (Learn and Work Institute, 2020)

The institute stresses the Covid-19 pandemic experience which helped to understand the necessity of creating synergies and different collaborations among the various sectors through a holistic and interdisciplinary approach. Synergies such as that of the health and education sectors can help to raise awareness and support self-development and personal growth. The pandemic experience has also highlighted the important role of informal and non-formal learning settings and environments as a solution in times of crisis, which provides more flexible communication channels among the different learners and stakeholders, online courses, and

a wide range of digital resources. These informal learning settings support the holistic growth of individuals in the different aspects of cognitive, social, physical, mental, and emotional. (Learn and Work Institute, 2020)

The Learn and work institute targeted some important aspects within its framework of actions:

- **Health Literacy as an essential skill**

Developing the knowledge, skills, and understanding to be able to make confident health-related decisions. (Learn and Work Institute, 2020)

- **Older People and the Importance of Learning for their Health and Wellbeing**

There is a positive relationship between learning health and well-being. Different adopted methods of engaging older people in learning opportunities include: Intergenerational Learning approach, Creative arts activities, and a neighborhood house is a more friendly and flexible space for learning. (Learn and Work Institute, 2020)

- **Adult Learning and Physical & Mental Health and Wellbeing**

According to UNESCO, adult learning is provided through formal, non-formal, and informal methods and settings. All of which has their benefits and contribution to the physical & mental health and wellbeing of adults while providing a variety of learning opportunities in various contexts and environments that suit all individuals in relevance to their interests and preferred conditions. Adult learning is provided through different programs such as “Diabetes Prevention Programme (DPP) NI” – DPP NI is a group behavior change program for people who have been identified as prediabetic – or “The Active Belfast Scheme Program” – a multiagency program initiated by the Public Health Agency, Belfast City Council and Belfast Health and Social Care Trust and other Key partners – which approach health problems (such as heart conditions, cancer, diabetes) through a set of physical activities and social communication networks that prevent isolation, challenge barriers, promote awareness, and encourage the adoption of a healthier lifestyle that prevent diseases and improve physical and mental health and wellbeing. (Learn and Work Institute, 2020)

The support programs for adult learning also include intergenerational learning programs that have many benefits regarding the health and education of children whose parents are engaging and participating in such programs. (Learn and Work Institute, 2020)

- **Workplace Learning**

Workplace learning is not only about developing skills related to a specific job but also encompasses the development of other skills that can promote health and wellbeing. Working environments can also be utilized to address a lot of issues in the labor market such as irrelevance of skills to the job market needs, low productivity and quality of work, inequalities, and insecurity of work. (Learn and Work Institute, 2020)

Personal support programs and activities within the workplace were created and initiated to face these challenges, improve the life quality of the working force, and support their self-development, personal growth, physical well-being, and satisfaction. These programs include the "Here4U" program – A set of activities created by Belfast Health and Social Care Trust – that is open for all ages, genders, and abilities, and it is free of charge. This wide-range of activities includes pilates, football, choir, Zumba, boxing, Tabata, yoga, and spin. Also, it incorporates Skill-based activities, such as flower arranging, car mechanics, photography, guitar lessons, dance, furniture up-cycling, and mindfulness. (Learn and Work Institute, 2020)

A collaborative approach of partnerships among adult learning professionals in workplace learning, employers, health providers, communities, voluntary sector providers, and local authorities, should be adopted. These different sectors need to work together hand-in-hand providing all workers with direct and easy access to learning opportunities, which offer support for the needed skills, equal and fair chances for progress, and improve the quality of life, health, and wellbeing. (Learn and Work Institute, 2020)

- **Learning for Health & wellbeing – A Learning City Perspective**

Promoting learning for physical and mental health and well-being purposes is an essential aspect of learning cities and one of the main key elements in the UNESCO holistic framework for learning cities, as it equips individuals of all ages with the ability to make healthier lifestyle choices, which impact the overall health and wellbeing of them, their families and people surrounding them. In the following paragraphs, we will discuss Cork Learning City in Ireland as an inspiration for how to integrate learning opportunities for health and well-being into a cross-sectoral holistic approach towards progress and lifelong learning across the city. (Learn and Work Institute, 2020)

- o **Cork, Ireland – UNESCO Award Learning City**

Cork has been a member of UNSECO GNLC – an international policy-oriented network supporting local governments to develop lifelong learning strategies – since its foundation in 2013. (Learn and Work Institute, 2020)

Cork has provided a holistic approach to city development that targets social, economic, and environmental plans. As an action towards building Cork as a learning city, It developed in 2004 a lifelong learning festival, which is an annual festival that is open to all public for free and celebrates the different forms of learning. The festival was a crucial step toward the realization of the Learning City concept and it incorporated collaborative work among organizations from different sectors that share a common interest in learning. (Learn and Work Institute, 2020)

- **Learning Neighborhoods**

In 2015, Cork applied actions towards the learning city approach at the local community level. It started with a collaborative partnership of two community networks to co-design a learning neighborhood pilot scheme (such as The Learning Neighborhoods in Limerick which was established by Limerick Learning Neighbourhoods Steering Group). This scheme helped to create local educational networks and community development practices across the city. It involved local residents alongside various stakeholders as partners working together on the development plans and actions that encompass the different sectors and parties of local businesses, health centers, local schools, adult education centers, and early childhood learning centers. This supported the efforts of embedding learning opportunities across the city neighborhoods while promoting lifelong learning interests within the community for individuals of all ages. (Learn and Work Institute, 2020)

Learning Neighborhoods such as that in Limerick, have encouraged collaboration and sharing of local resources and spaces for lifelong learning purposes. This shared effort included the contribution of time, school and learning center facilities, materials, personal resources, and much more. In The Limerick learning neighborhoods, many initiatives took place to support the approach. These initiatives include a Music Café, a community networking event, a 'Brag & Borrow' event for sharing initiatives, a Readathon for local schools together with community groups, and an Open MIC event bringing young people and writers together. (Learn and Work Institute, 2020)

Such Neighborhoods elaborated on the benefit of adopting this holistic and cooperative approach toward learning. During the times of Covid-19 pandemic, they showed an excellent example of how their increased awareness, knowledge, and collaboration have helped them develop a shared care towards each other and encouraged them to respond in a perfect manner to the crisis while providing a great emphasis on the priority of the health and wellbeing for all. During the pandemic, groups of residents developed different projects such as meals for older people, delivering care packages, producing facemasks, connecting with learners through daily phone calls, and using digital communication methods such as Zoom and WhatsApp groups, and so on. (Learn and Work Institute, 2020)

## □ A Focus on Wellbeing

Cork has paid special attention to wellbeing as it is considered a process of balancing skills & resources with the different challenges of psychological, social, and physical dimensions. (Learn and Work Institute, 2020).

As an indicator of this special attention towards well-being, the new Irish The second Level Junior Cycle program provided by the National Council for Curriculum and Assessment defined this approach as:

*“Wellbeing is present when students realize their abilities, take care of their physical wellbeing, can cope with the normal stresses of life, and have a sense of purpose and belonging to a wider community.”* (Learn and Work Institute, 2020)

This definition is reflected through the program identification of six indicators of well-being that should be adopted by lifelong learners:

1. **Active:** Physical activeness.
2. **Responsible:** to take action regarding one’s well-being and others as well.
3. **Connected:** the degree of connection to the community, friends, and the world, and the level of interaction and its impact on the overall well-being of one’s self and others.
4. **Resilient:** The ability to adapt and cope with life difficulties and challenges while having the confidence to ask for help when needed.
5. **Respected:** The level of respect, value, and care received from and provided towards friends, peers, family, and everyone.
6. **Aware:** The degree of self-understanding and awareness of one’s thoughts, feelings, and behaviors, and the ability to recognize self-respected values and principles while having the capacity to apply them. (Learn and Work Institute, 2020)

**In Conclusion,** Belfast Learning City is a UNESCO learning city that incorporates different approaches to provide lifelong learning opportunities, with special attention to the health and wellbeing of all. It demonstrates six main factors that their integration will achieve the well-being aspect for any learner. Belfast is inspired by Cork city methods for lifelong learning opportunities such as the learning festivals. It showcases a model of a learning city that highly embraces different members of society, especially the elder groups.

Belfast’s process of transformation into a learning city was implemented using the same logical narrative which begins with providing a learning charter that indicates all the goals and necessary steps for achieving this goal. Adopting the goals of this charter, different institutes and organizations work together with the local government through a collaborative effort to provide lifelong opportunities for all and improve local conditions to offer various potentials for learning.

Although Belfast is a UNESCO learning city, it doesn’t encompass all the recommended narrative of case studies across this chapter. We can conclude from this real example of an already operating UNESCO learning city, that the concept of learning cities can be more developed and can integrate all the different means, methods, and environments of learning, which in the end will provide the outcome of what we call an Interactive Learning City.

## 16. Conclusion

This chapter showcased a collective narrative of how learning platforms, spaces, and methods should look like. It unveiled the reality of successful and engaging learning experiences that should be adopted in our educational approaches and embedded in our learning systems and environments. The different case studies in this chapter create a collective image and a visual summary of how we can transform our city spaces and environments into effective, interactive, and inclusive learning forums. We can start with the charter to identify global goals, approach it with city programs that suit local conditions, and implement it with an idea like that of the Campus concept. The campus concept can be more developed to integrate the different facilities of the whole neighborhood, encompass all its disciplines, and diffuse learning across all platforms. It can provide learning in its authentic form and original place while offering cooperation between the different neighborhoods to exchange learning experiences for the continuous progress of their community learners.

We can re-imagine the different examples of this chapter and scale them up or down or even mix them to create synergies that serve our goals. The idea of Elon Musk Ad Astra school and Megawra - BEC can be implemented in all professional fields of practice forums where learning different fields and sciences can take place through the specific disciplines' scope, materials, and workspace. The integration of virtual mediums for learning such as that of Astr Nova school can take place in many learning environments, but we can also integrate these mediums within physical spaces and maybe public ones as well. The virtual medium has its advantages and certain importance, but it cannot replace the physical one, as not all people are able to learn consistently and efficiently through virtual mediums only. The Museum of Science and Industries in Paris is an example of how any building and any architectural function and space program can be repurposed and designed to serve educational purposes and provide successful learning outcomes. Technological tools such as the Google Expedition app or MinecraftEdu platform can both be used in our educational platforms or even public learning environments, where these environments can offer various tools for learning for different learner groups. This learning atmosphere will engage learners who are using them and encourage others who are watching them to experience these interactive methods of learning.

The know-how methodology introduced in this part of the paper identified the different forms and methods of successful learning experiences. These selected case studies, elaborated on the different features and characteristics introduced in the second part (The What), so we can obtain an innovative learning approach and provide an effective learning environment. It showcased alternative methods of education that use personalized and technological instruments and mediums while offering a collaborative learning atmosphere. It allowed us to understand how the different stakeholders and entities of our society can assign their efforts

to provide unique learning experiences that foster growth and well-being. We can see these different case studies demonstrate the methodology of overcoming the educational difficulties and challenges highlighted in the first part (They How) of the paper. It showed us how to reduce the gap between professional practice and the educational system, how to diminish inequalities, facilitate access to various learning opportunities, localize needed resources and instruments for development and growth, utilize different spaces for learning, and adopt interactive and playful methods when offering any learning opportunity.

This is just a quick and brief imagination of how we can utilize, re-imagine, reshape, develop, and transform the different types of environments using these different examples and many more that will help to turn them into endless and limitless potentials and opportunities for effective, interactive and inclusive learning experiences for all. This process of rethinking our learning landscapes can provide a future of holistic growth and prosperity for everyone, especially children, where no one can feel abandoned, left out, or unequal. All citizens and members of societies of cities across the world will be able to access endless learning opportunities and resourceful environments of materials and tools that will help them develop and acquire the necessary skills for future challenges facing the world. Regular cities of the world can transform their environments into learning ones and even UNESCO learning cities can develop more to become ILCs that encompass and utilize all their resources for the sole purpose of learning and educational opportunities for all and all the time.

	Scale	Space	Approach	Actors	Methodology	Objectives
<b>Megawra – BEC, Cairo, Egypt</b>	Urban Neighbourhood	Physical Environment District - Historical urban space	Bottom-up	NGO & Architecture Office – Private	Heritage Education	Heritage as a tool for Education and Urban Development
<b>Google Expeditions Application</b>	Universal	Virtual Environment – Public - Mobile Application	Bottom-up	Google – Private	Virtual Interactive Game-based Learning	Explore The World Through Interactive Virtual Trips
<b>The Minecraft Edu Platform</b>	City	Virtual Environment – Public - Video game	Bottom-up	Microsoft – Private	Virtual Interactive Game-based Learning	A tool for learning through video games ( The Know How )
<b>The City of Sciences &amp; Industry Museum, Paris, France</b>	Urban Space	Physical Environment – Public - Museum	Top-Down	French Government – Public	Physical Interactive Playful Learning	Intellectual Development Motor skills - Linguistic Abilities - Notion of time - Self Discovery
<b>Urban Thinkscape – Bus Stop, Belmont Neighbourhood, Philadelphia, USA</b>	Urban Area	Physical Environment – Public - Bus Stop	Bottom-Up	Playful Learning Landscapes Initiative – Private	Physical Interactive Playful Learning	Cognitive Development
<b>The Learning City – Belfast, Northern Ireland, United Kingdom</b>	City	Physical Environment – Public	Top-Down / Bottom-Up	Multiple Stakeholders – Public & Private	Inclusive Learning City	Lifelong Learning
<b>AltSchool</b>	Traditional School	Physical Environment – Private	Bottom-up	Max Ventilla – Private	Personalized Education	Technology enabled learning method with traditional Classroom Learning
<b>Elon Musk Schools (Ad Astra School – Astra Nova School)</b>	School	Physical & Virtual Environments – Private	Bottom-up	Elon Musk – Private	Alternative & Personalized Education	First Principles & Creative thinking Cognitive Development
<b>Campus Rütli Berlin</b>	Deprived Neighbourhood	Physical Environment – Social space as Educational Space	Top-Down	German Federal Government	Social – Economical	Unifying School and Neighbourhood Life

Table 01. Case Studies Summary

## **Part IV**

**Conclusion**

**The Interactive Learning City (ILC)**

## Conclusion

### The Interactive Learning City (ILC)

The previous chapters of this paper act as a built-up narrative and a roadmap to conclude a clearer perspective and definition of what we identified as an ILC and provide a framework of guidelines and actions for the transformation of our cities into ILCs.

Each chapter of this paper highlighted certain remarks that are essential to be outlined, considered, and implemented to initiate a process of changing our cities for the better.

In the first part of this paper (The How), we identified certain issues and challenges facing traditional methods of schooling and education which includes limitation of learning methods, educational inequalities, confined environments, the impact on society, the lack of purpose, and the gap between the real world and the educational world. The chapter also highlighted that learning is not bound to any certain locations, boundaries, or curriculum, but it rather happens all the time and everywhere and it mostly occurs through interactions and exposures to the various environments, people, disciplines, and all aspects of life. Moreover, the paper continued to illustrate the different features of an innovative learning approach, stating that the learning experience must be liberated from these obligations and constraints that are causing limitations of progress and holistic growth. It demonstrated the different key factors influencing learning and development, in which a learning experience should be interactive, playful, dynamic, flexible, and personalized. It also highlighted the crucial importance of technological integration within the learning process, while identifying the different types that can be most beneficial, and pointing out the fundamental importance of utilizing all these recent digital means and technological tools for learning purposes.

Furthermore, it ended the first part with its last section of how is an effective learning environment. As we all process learning differently, the learning environment should offer different types of spaces for learning to take place effectively. This section, defined the main standard types to form a successful learning space, which includes the cave (self-reflection space), watering hole (peer-to-peer communication), campfire (elder guidance and sharing of expertise), and life (real-life connection and relevance), for which all serve a different purpose for an inclusive learning experience for all. Then, it outlined the different key elements that need to be present in any successful learning environment and space. These key elements encompass flexibility, collaboration & interaction, creativity, connection, and relevance to the real world, open-access & inclusive, synergy & interconnection, and last but not least technology & intelligence.

The second part (The What) highlighted the fundamental importance of interaction in the learning experience and process. Through the different sections of this chapter, it proved that interaction is the essence of the learning experience. It achieved that by demonstrating international programs and goals for the future development of education and planning of our cities. It illustrated the different aspects of these programs and concepts such as the OECD Future and Skills 2030 program, the learning city concept, lifelong learning, learning society, and opening up education, in which it highlighted their main essence - interaction - and pointed out its essential presence for a successful, effective and inclusive learning experience. It then moved to identify the different forms of interaction and highlighted the benefits of each form to the overall learning outcome. From all these previous sections, it ended the second chapter by concluding the first preliminary definition of an Interactive Learning City (ILC).

In the third chapter (The Know-how), the paper drew a roadmap to identify the know-how of transforming our cities into ILCs. It achieved that by implementing a built-up narrative that showcased real-world applications for interactive educational policies and strategies (such as that of the Leipzig charter), programs (such as the social city program), platforms (such as the Museum of Science and Industries or Megawra - BEC), alternative methods (as that of Elon Musk School or Max Ventilla AltSchool), functions (such as Urban Thinkscape bus stop pilot project), tools (such as MinecraftEdu or Google Expeditions app) and neighborhood spaces (such as the Campus Rutli), for which the total outcome obtained will help provide a city-wide learning ecosystem, and a holistic approach towards shaping and implementing a successful and interactive learning city. The chapter roadmap helped to develop a deeper understanding of the specific features and steps of how to transform the different types and scales of our urban landscapes into educational environments, where learning is embedded within the very fabric and infrastructure of the city. It illustrated these different types to highlight the high potential and indefinite possibility of transforming any kind of environment, space, and function of any scale into a learning one. It also pointed out the opportunity of integrating all these case studies together into a collaborative cycle that can provide a final outcome of a framework for an ILC model.

Finally, in this conclusion chapter and the final part of the paper, we will demonstrate the different components of an ILC and highlight its essence, flow, and operational process. This illustrative process will start with the following case study of KidZania, which is the main inspiration for the Interactive Learning City (ILC) concept. Then we delve into the last section of this final chapter, which provides a clear identification of an ILC from all aspects. It achieves that through a series of questions, for which their answers can demonstrate a clear representation and a deep understanding of what an ILC exactly is.

## 17. KidZania “A Children Learning City” – A Model of Inspiration for the ILC

**Scale: Mini City**

**Space: Physical Environment – Private**

**Function: Edutainment (Educational – Entertainment)**

**Actors: Private Business Professionals**

**Approach: Bottom-Up**

**Aspects: Physical Interactive Playful Learning**

KidZania is a powerful learning platform which acts as a main inspirational model for an ILC and will perfectly suit its educational narrative and learning concept.

### 17.1. Xavier Lopez Ancona – Founder & Creator of KidZania

Xavier Lopez Ancona is a Mexican, management graduate, and an MBA holder. He worked for a few years as a company consultant and a vice president in Mexico. He had a passion for creating a project that adopted entertainment as a main tool for learning and education for children. Xavier started observing his nieces and nephews and understand what they like and dislike in the different places and platforms. He then paid great attention to the natural ability of children to imitate adults and people around them. This natural instinct for role-play, which is both an entertaining and educational activity for children, has inspired him to adopt it as a main tool for his project concept while giving its essence the maximum expression. (Merlin, 2021)

The project’s unique concept was to merge education and entertainment into a unique “edutainment” process of role-play activities for the different world professions for kids from 1-14 years old within a safe environment and a complete city of their scale. The project started in collaboration with sponsor companies to support its funding and reinforce its success. The project idea received huge success and rapid growth across different countries of the world. (Merlin, 2021)

### 17.2. KidZania Profile

KidZania is an interactive city that is made for educating children ages between 2-16 years old through an experiential learning approach that offers fun, entertaining, inspirational, and realistic role-play activities of the various real-world professions.

The KidZania concept was created by Xavier Lopez Ancona, who was the founder of the first-ever KidZania in 1999. (KidZania, n.d.) The first facility of KidZania opened in Mexico with the initial name “The City of Children”, and was the spark that began to expand afterward across the globe to reach a current number of 26 operating facilities in 23 countries worldwide. KidZania receives around ten million visitors yearly and is considered one of the fastest growing global learning and entertainment brands in the world. It also

has an extra nine facilities that are currently under development, where all these facilities offer the same unique experience that is developed through a collaborative team effort of private individuals, designers, educators, play experts, child physiologists, and business professionals who tailor fit this experience to the local culture and environment. (KidZania, n.d.)

### 17.3. KidZania Concept

On a total area of around 7000 square meters, KidZania provides a scaled city (mini-city) within an indoor controlled environment, that ensures the safety of kids. Through its real-life role-playing activities, children are offered the opportunity to independently explore and try more than 100 career professions, so they can deepen their learning and understanding about the different jobs from an early age while identifying their interests and building their decision of who they want to become as they grow over time. (KidZania, n.d.)

KidZania offers five main learning categories: (KidZania, n.d.)

- **How a City Works:** This defines the physical environment that is built to mimic the real city, where it encompasses buildings, city blocks, plazas, streets, and battery-operated cars.
- **Financial Literacy:** This category helps kids obtain personal skills in the field of finance, where they use KidZania own currency “kidZos” and learn the different ways of operating with it as earn, spend, save or donate. They also do these operations through the city bank and ATMs, where they request a debit card and open saving accounts. The third category is “The World of Work”
- **The World of Work:** Kids in this city learn and experience the various types of jobs in the different sectors of Corporations, Government or Non-for-Profit Institutions.
- **Model Citizenship:** As for its many activities, it helps kids to become active participants and support them in contributing to good causes and engage in complex societal and environmental issues.
- **Good Habits:** As early as these values and habits are instilled in children, as long as it can last. Children in KidZania are constantly developing these positive habits along with the activities performed. They take care of their health and personal hygiene, and how to act in emergency situations while maintaining safety. (KidZania, n.d.)

By introducing reality in an entertaining way, it provides a powerful learning platform that can ensure the development of various behavioral skills and values in children through exploration and discovery and allow them to understand how the real world operates while preparing them for its challenges.

Children of KidZania perform different roles (Pilot, Surgeon, Detective, Chef, Engineer, TV Producer, Radio Jockey, and many more) in the many industries in the real world. These industries include private services, public services, entertainment, airlines, automobiles, retail, restaurants, and factories. Kids of KidZania

learn through direct experience using the methodology of “Learning by Doing” rather than listening to theories and memorizing facts. This helps them to sharpen their skills and abilities so that they can creatively operate in complex situations and innovatively think of possible solutions. They learn things like how to manage money and invest it in different aspects and fields as education.

#### 17.4. Benefits of Learning through Role-Playing Concept

Kids have a natural ability and desire for role-playing behavior. It is a natural instinct that they don’t need any instructions, guidelines, or explanations from adults to be able to perform it. They usually imitate the exact behavior of adults in doing things, by just watching them. (KidZania, n.d.)

Role-playing is the essence of KidZania’s concept of experiential learning. It is an effective tool that KidZania aims to utilize to its maximum expression. Children perform role-playing activities by simply putting themselves in someone else’s shoes. They wear their costume, use their equipment and tools, communicate, take risks, and make decisions as that of one’s character. (KidZania, n.d.)

Through role-playing, children deepen their understanding of the real world they live in while developing their core skills (cognitive, psychomotor, social, emotional, language), boosting their values, and expanding their knowledge and awareness to face challenges and achieve success. (KidZania, n.d.) Each of these aspects of development has its detailed benefit and strong impact on each child. For example, social and emotional skills allow children to experience different roles where each is accompanied by specific fears, worries, and difficult situations and decisions. This helps them deeply understand what other people feel while having empathy for them because they once were in their shoes. It also helps them to develop the collaborative skills that they need to communicate and cooperate with their peers.

The physical and cognitive development benefits lie in performing the exact physical roles of different professions such as doctors performing surgeries, firefighters operating water hoses, and factory workers using their equipment. They also develop their cognitive skills by doing activities such as counting change in the supermarket which develops their mathematical skills, or participating in a trial at the courthouse which targets their literacy skills. (KidZania, n.d.) All these activities support the child in developing his psychomotor skills while practicing hands-on activities, using different materials,

objects, and tools, and sharing ideas and thoughts with others.

For this reason, the KidZania model is a main inspiration as a model for the implementation of ILCs. It coincides with the global development goals of the OECD for the future of learning, where kids can develop their own learning compass through the role-play approach.

#### 17.5. The Physical Environment – A Complete City

The mini-city of KidZania is a replica of the real-world city’s physical environment but on a child-sized scale. It is formed of one big environment that is composed of many small ones, in which it imitates a thematic mix of industry sectors. (KidZania, n.d.)

Each individual city of KidZania has its complete urban planning of streets, roads, blocks, buildings, monuments, town halls, and all other needed facilities, which provides a sense of a real city that has been designed and implemented, especially for kids. (KidZania, n.d.)

The city plans are always organized into three main areas: Entry and Exit, City Center, and Suburbs. (KidZania, n.d.)

- **Entry & Exit:** The entry area, known as “the Airport”, is an airport ticket counter that provides access to the city, while the exit area is designed as an immigration counter which allows visitors to exit.
- **City Center:** It hosts the institutional building in the central plaza along with the monument of the Eternal Spirit of KidZania.
- **The suburbs:** as in reality, are located on the outskirts of KidZania ground floor. It usually encompasses single story commercial establishments and residential buildings to give a feeling of spaciousness.
- **Establishments:** This is the most important part of the city as it accommodates the role-play areas. These areas are representative of the most common businesses, services, and industries that contribute to a traditional city’s growing economy. These establishments host a mix of the following industry sectors: Automotive, culture, education, entertainment, environment, health, industrial, media, private services, public services, residential, restaurants, retail, sports, and transportation.
- **Points of Sale:** They act as points that complement the city establishments, where a wide range of products is offered to its visitors.
- **Food & Beverages:** Meals and snacks of different options.
- **Merchandising:** a variety of selected products such as souvenirs or educational toys that children can take home.
- **Media:** Through photos and videos, children can document their memories of the KidZania experience. (KidZania, n.d.)



- MEDIA (NEWSPAPER - RADIOSTATION)
- EDUCATION (DANCE ACADEMY - ACTING ACADEMY - EARTHQUAKE PREVENTION TRAINING CENTER)
- PUBLIC SERVICES (TOLL BOOTH - CNG STATION - SECRET AGENT TRAINING CENTER - COURT HOUSE- FIRE STATION - POLICE STATION)
- AUTOMOTIVE (DRIVING SCHOOL - DRIVING STREETS)
- HEALTH (HOSPITAL - EMERGENCY ROOM - DENTIST)
- RETAIL (FASHION STUDIO - SUPERMARKET - DEPARTMENT STORE)
- SPORTS (STADIUM - CLIMBING BUILDINGS)
- PRIVATE SERVICES (COURIER - CAREER CENTER - FURNITURE STUDIO - SKILL DEVELOPMENT CENTER)
- CULTURE (POTTERY ART STUDIO - ARCHEOLOGICAL SITE)
- FINANCE (BANK & ATM)
- ENTERTAINMENT (THEATER)
- RESTAURANTS (NUTELLA BREAKFAST DELLI)
- ENTRANCE
- P PARENTAL INVOLVEMENT

CHILDREN ACTIVITIES AGE (2 - OLDER)

HEIGHT OF SOME ACTIVITIES

MINIMUM 90 CM - 130 CM

MAXIMUM 130 CM

CURRENCY - KIDZOS (EARN - PAY)

**Fig.53.** KidZania Establishments - "A mini-city" - Diagram Modified by the Author  
Source: (KidZania, n.d.)

## 17.6. KidZania - The Future

Children are not really considered when it comes to planning and designing our urban and architectural spaces and services. Our spaces are missing children in every aspect; A simple example is that of daily public transportation such as a metro vehicle or a bus, both don't include a child-scaled seat or any child-related instruments or services. On the same aspect, you can find how many other aspects that children are totally excluded from the equation and they don't feel a real belonging to their own cities.

KidZania is a powerful learning platform that will perfectly suit the narrative of an ILC. It provides an experience combining both education and entertainment. This experiential learning experience has a profound impact on accelerating children's learning and development, where it puts theory into practice and adopts the learning-by-doing approach as the main educational method. It applies this method in a safe, dynamic, and engaging environment, in which children can explore and play to develop their core skills, creative potentials, and personal values. They achieve this through performing role-play activities that mirror real-world professions in various fields of practice. The opportunities offered in KidZania are offered through curriculum-based role-play activities, where children can understand the purpose of their learning and be in immediate contact with its tangible outcome.

KidZania experience is a unique interactive learning approach that connects children to their careers of the future and equips them with a deeper understanding of the real world they live in. It empowers and inspires them to become confident individuals and creative thinkers who are prepared with the needed skills, knowledge, and capabilities to face complex challenges and see different opportunities that the future holds for them. It also offers great efforts to ease the way for teachers and schools to collaborate with KidZania through its pre and post-visit resources that adapt to each country's needs and to its local curriculum. This will help extend the learning from the classroom to KidZania and back again.

## 17.7. A practical inspiration for an ILC operating model

The KidZania concept acts as a main inspirational model to be adopted for the implementation of an Interactive Learning City. The success of this model lies in its collaborative effort of professionals from different disciplines (which exactly pictures how an ILC framework operates), where they work together to provide an effective educational model for the sole purpose of offering an inclusive & experiential learning approach for all children from the very beginning of their life journey.

The KidZania model demonstrates the essence of the ILC concept. It showcases how the learning experience can transform completely into a different, unique, and effective narrative, where interaction occurs with all disciplines and professions in its authentic form & through its original process and space.

An ILC takes the concept and model of KidZania a step further and applies it on the larger scale of a real city. It offers children a series of platforms that work on solving the issues of child exclusion from our city spaces, environments, and services as well as the inefficient learning experience. It achieves that by offering a different narrative, model, and operational framework so that children can own their cities and their cities can embrace them. A child in KidZania and an ILC own the city, in which all city spaces, environments, and platforms are offering a child-scaled experience for the sole purpose of learning through interaction, exploration, and entertainment. This will give the child the needed space and instruments for holistic personal growth and self-development.

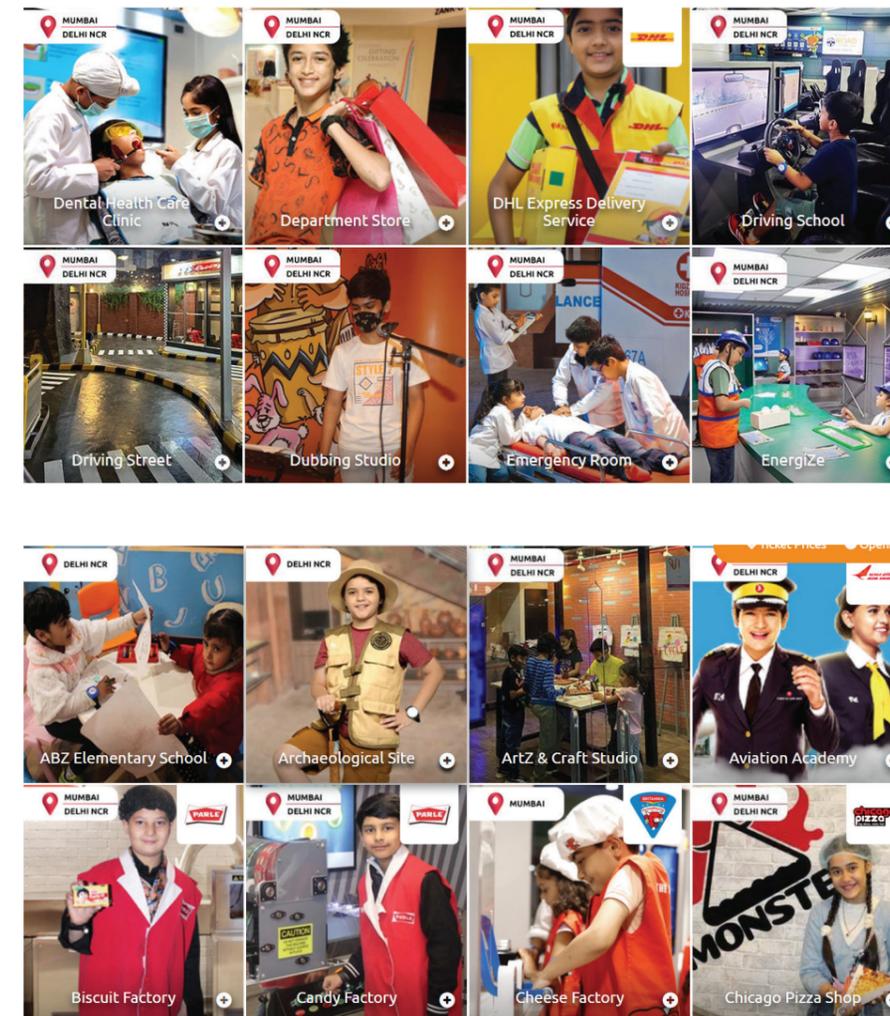


Fig.54. KidZania Role-Play Activities  
Source: (KidZania, n.d.)

## 18. The Interactive Learning City (ILC)

This chapter started by introducing KidZania as an inspirational model for the implementation of an ILC, which helped to understand the main essence of the ILC concept and to visualize the educational experience to be provided.

Following the built-up narrative constructed in this paper through all the previous sections and chapters, we can finally develop a deep understanding and a clear image of what an Interactive Learning City (ILC) exactly is. An ILC indicates the necessity of reforming our educational narrative and learning environments and transforming them into interactive learning ones. The following series of questions will help demonstrate all the aspects of an ILC and provide the needed framework of guidelines and actions that will help realize the ILC in our real world. The questions go as follows:

- **What is an ILC? - “The Definition”**
- **How is an ILC? - “The Experience”**
- **Why an ILC? - “The Reasoning & Goal”**
- **Who is the main focus of an ILC? - “The Main User”**
- **The know-how to realize an ILC? - “The Framework (Guidelines & Actions)”**
- **What other suggestions and recommendations? - “Further Steps”**

With the following answers to these questions, we can finally conclude the ILC on the different levels and dimensions.



### 18.1. What is an ILC - “The Concept & Definition”

The ILC concept is inspired by the KidZania concept, but not an exact replica, where a city will include multiple KidZania venues. An ILC is adopting the kidZania concept, scaling it to the size of a real-world city, and implementing its inspirational narrative as the main educational narrative within our cities and across the different platforms and environments, in which exploration, exposure, and interaction can have their maximum expression for an outcome of a holistic learning experience.

In the second chapter of this paper, we concluded the first preliminary definition of the Interactive Learning City (ILC), where we defined it as:

“A development of a learning city, in which learning and lifelong learning opportunities are provided from the very beginning of a child’s life journey using various forms of interactive and playful methods through a collaborative approach across the different environments, platforms, spaces, sectors, disciplines, ages, entities, backgrounds and stakeholders in a just and equitable manner. The learner’s educational experience in an ILC is not bound to a certain platform of an educational institution, but rather on the move. It is an outcome of a series of exposures and interactions with all aspects and disciplines of life in its authentic form and within its original architectural or urban boundaries, using innovative, technological, playful, and interactive means for a holistic and effective learning experience”.

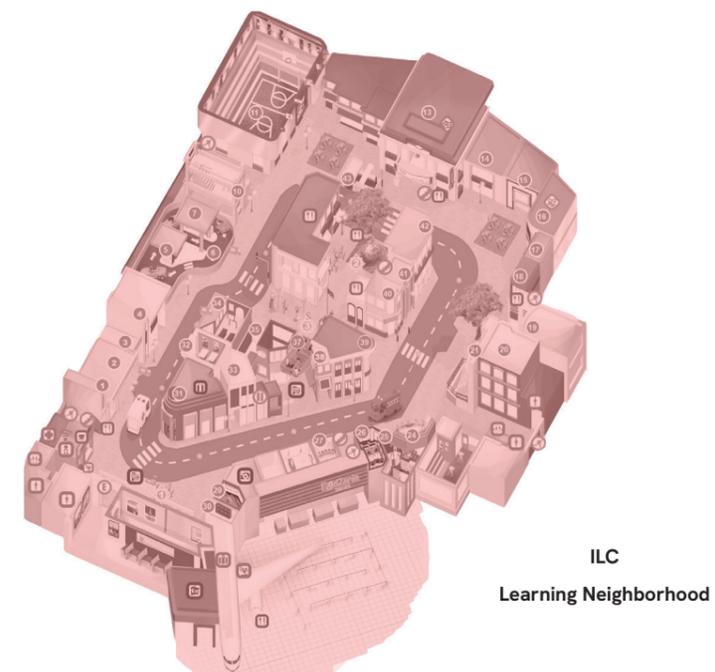


Fig.55. Educational Platforms in Regular Cities and ILC - Diagram Modified by the Author  
Source: (KidZania, n.d.)

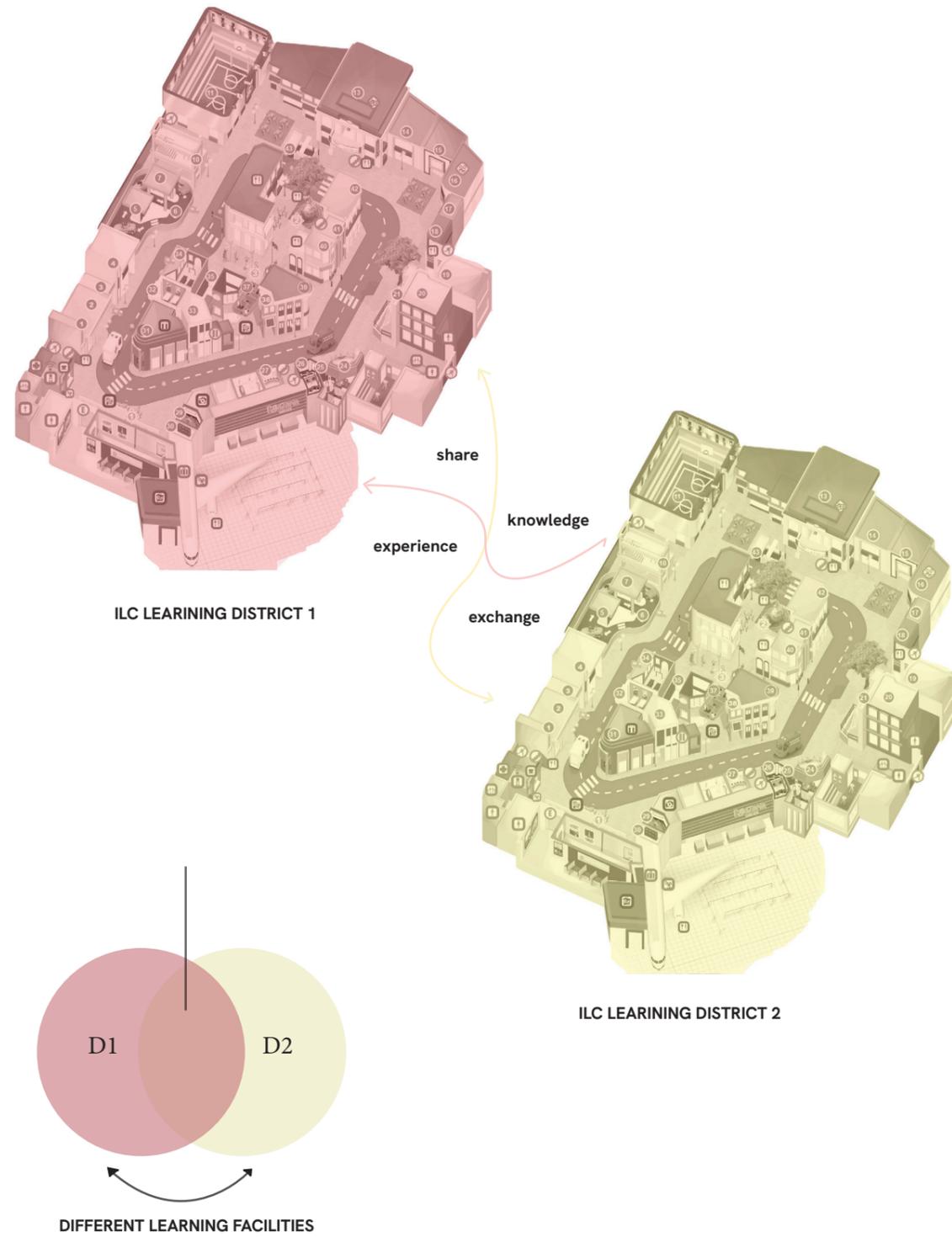


Fig.56. ILC Learning Districts - Diagram Modified by the Author  
Base Diagram Source: (KidZania, n.d.)

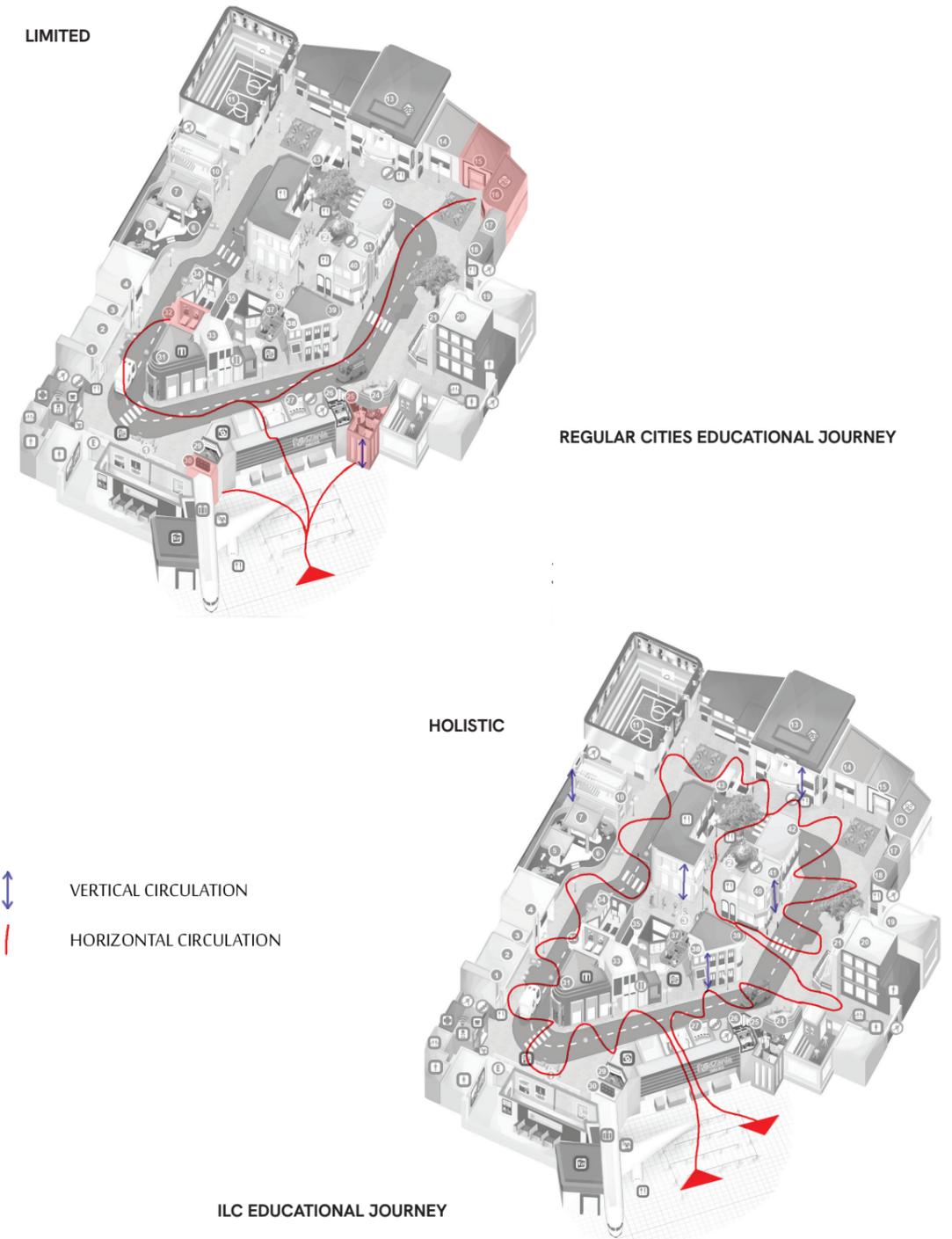


Fig.57. Learner's Circulation & Type of Interaction in Regular Cities and ILC - Diagram Modified by the Author  
Base Diagram Source: (KidZania, n.d.)

## 18.2. How is an ILC? – “The Experience”

The learning experience in an ILC is different from that of any regular city. We previously stated in the definition of an ILC that a child’s learning experience is not obligated to certain boundaries of a school, nor confined within the regular educational methods and spaces. In an ILC, the notion of traditional schooling and the regular architecture of a school building function is no longer required or applied, but it rather offers a learning experience that is on the move. The school concept is more diffused and spread out all over the city spaces and environments, where learning a specific discipline or aspect takes place in its authentic form and original process, flow, and environment. Any and every space in an ILC is an educational one and offers an opportunity for learning and interaction with all its surroundings.

A child in an ILC will learn through a series of exposures and interactions using playful and entertaining methods that ensure engagement, attraction, encouragement, and commitment to the lifelong learning concept, and offer a fulfilling purpose and a multi-disciplinary learning experience from the early beginnings of a learner, where he can develop constantly, understands himself and the surroundings more deeply, and identify his interests, skills and capabilities for which he can pursue his goals and ambitions.

To elaborate more, we can take an example of a neighborhood that acts as an open learning platform for its community members as well as other members of society outside this neighborhood. A traditional school in this neighborhood will no longer exist, but we can understand now that the neighborhood is actually an open school, where all its (classrooms) spaces are acting as platforms for learning in relevance to each function and architectural space type. In a regular school, the same classroom is teaching different disciplines within the same architectural boundaries and space configuration with no relevance to the material being taught at hand. There is no connection between a space and the learning material instructed. In an ILC, this connection is being strengthened by communicating the proposed material and discipline in its original platform and authentic form. For a child to learn medicine, he will experience it in a hospital learning space that is designed for children at their unique scale and playful methods of communication. This will essentially incorporate digital and technological means for a more immersive, interactive, and limitless learning experience. The same idea can take place in every function and discipline. An architecture office (such as Megawra – BEC) can offer a learning platform within its working space that is also scaled for kids, so they can have no fear of engagement and can easily interact with the learning process, the people, and this field of practice.

Other examples include a factory that can be a learning factory where it offers learning through its specific industry within its space boundaries (such as Elon Musk Ad Astra School case study), a public park can be an educational park (such as Urbanthinkscape project or the festival of learning in Belfast), a museum can be a learning

museum (as that of Museum of Science and industries in Paris), and we can elaborate more and more the different disciplines one by one and explain how it can be applied. But you get the idea. So, these are some examples of how a child can move from one place to another within the city for the purpose of experiential learning and exploration of the different environments of his city. An ILC will not have a duplication of facilities for the same purpose and within the same environment. It will provide its learners with a deep understanding of all aspects and fields.

A generation that is growing within an ILC environment will develop a holistic awareness and perception of the whole world disciplines and fields, and the surroundings around him from different perspectives and aspects. He will have no fear of what’s after the educational journey as he is already immersed in the different environments of all fields of professional practice. He will understand the overlap between all these disciplines from his early learning days and can now connect all the parameters and draw unique narratives for his own career path and life journey in relevance to his own interests and abilities. He will inevitably have a purpose, gain the needed skills, and utilize his full potential, where he can grow holistically, communicate interactively, and develop fearlessly.



Children Education in Regular Cities



Children Education in ILCs



Adults in Regular Cities

Fig.58. Child Learning Experience in Regular Cities and ILC - Diagram Created by the Author

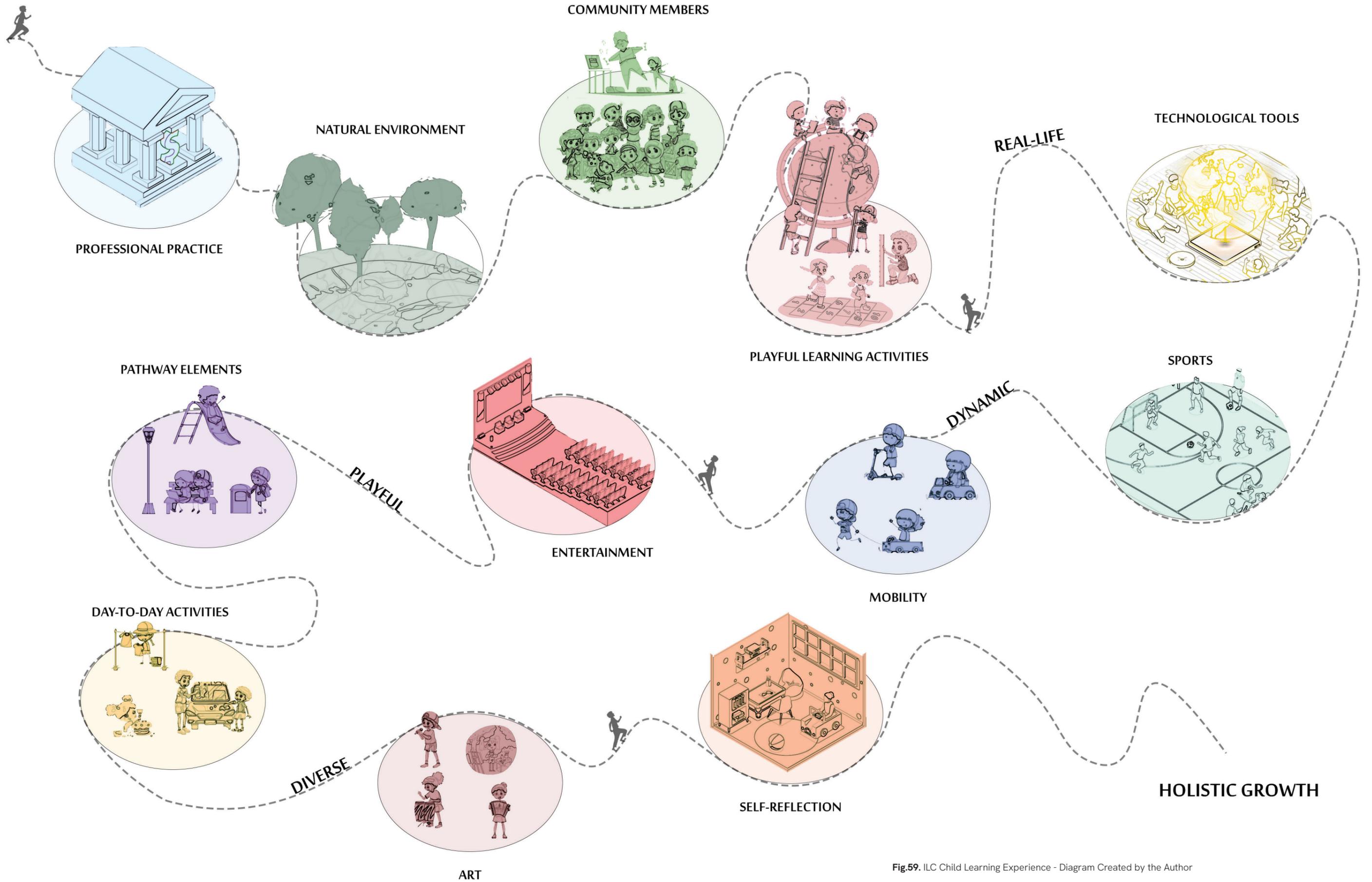


Fig.59. ILC Child Learning Experience - Diagram Created by the Author

### 18.3. Why an ILC? – “The Reasoning & Goal”

An ILC is a fundamental approach to be adopted for an inclusive learning experience that can offer holistic growth and personal development in all aspects of the early childhood life journey. It will address all the issues and challenges facing traditional educational methods and forms that are mentioned in the first chapter of this paper with effective solutions so that we can conclude an effective learning environment that integrates all the features, characteristics, and types of spaces for a holistic and successful learning experience. The ILC concept will help each child to develop his Learning compass (OECD Future & skills 2030 Program) while developing a deep understanding of his abilities, attitudes, qualities, goals, and overall sense of awareness and purpose.

The goal of an ILC is to provide this interactive and inclusive learning experience elaborated in the previous point, and transform our educational models, methods, spaces, and environments into effective learning ones that can achieve this purpose and implement this goal.

It aims to achieve that by bringing together all the city sectors, fields, entities, disciplines, spaces, community members, and stakeholders in a collaborative educational approach that encompasses all forms of interactions across the city and puts the child and the interactive learning journey at the heart of its development strategies, designs and actions. This approach is with the primary focus on offering interactive and playful learning opportunities with special attention to early childhood education, where learning takes place through a series of exposures and interactions with every aspect of life. Any regular space is a learning place, and an ILC is an inclusive learning platform for prosperity and growth, where a generation of active participants, critical thinkers, and bright minds can grow holistically, while developing trust and care for all other members of the community and the whole world.

### 18.4. Who is the main focus of an ILC? – “The Main User”

In our regular cities, the child is missing in its spaces, environments, and development plans. He is not a priority in the big picture but just a part of it. However, in an ILC, the child is everything.

In the ILC model, a child is the main focus, but within a collaborative and interactive learning atmosphere of knowledge exchange and sharing of expertise across the different ages of the community and all its disciplines, sectors, and environments. It will provide a learning benefit for all, where everyone interacts with the surroundings including people, disciplines, spaces, environments, and all aspects of life.

The ILC will embrace the child and help him own his city. It will include the child in every aspect of life including city spaces, services, instruments, and environments. It will integrate him into the whole process from planning to designing to implementation and put him at the heart of development.

In an ILC, a child is immersed within the community and his city. A parent can be present in the learning journey of his child. Peers, instructors, and caregivers can all communicate together and with the children of the community for the better result of learning engagement and commitment. A professional practitioner or a company owner can discover young potentials in certain disciplines and careers from the early beginning and can offer them the needed care, tools, and facilities for limitless progress and ultimate success.

An ILC is a just and inclusive system of collaborative effort, putting children at the center of progress, and achieving success, interaction, and prosperity across all disciplines and for all members of society.

### 18.5. The know-how to realize an ILC? – “The Framework (Guidelines & Actions)”

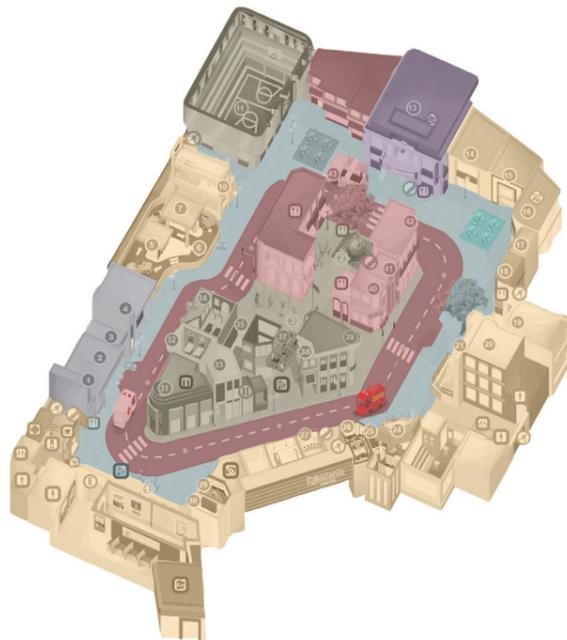
Following the constructed narrative in the case studies chapter, we can adopt this approach to initiate a transformation process in our cities into becoming ILCs. This transformation process will take place through a vertical (both bottom-up and top-down) and horizontal approach at the same time, where all community sectors and entities pursue certain principles and share a common goal for the purpose of providing a holistic and accessible learning experience for all with special emphasis on children and young ages learning journey.

- Global discussions and debates would occur among organizations, governments, and various sectors to constructively analyze, criticize, and develop the ILC proposal.
- Further testing, detailing, and experimenting would take place for an official validation of the ILC concept and the initiation of its realization process.
- Global organizations, Governments, and public authorities will initiate the process with a collaborative effort to issue an “ILC Global Charter” of policies and strategies that will identify the principles, goals, and actions needed to realize an ILC.
- Following this document, local public authorities of different cities will identify certain urban development programs in relevance to their local conditions, where these programs will be a tool for implementing these strategies and goals, targeting the different disciplines and functions of the city and transforming their environments into learning ones.
- Urban planners and architects with the help of private and public authorities will simultaneously work together to start the transformation process of our environments into interactive learning ones.

- They will apply the goals of the urban development programs that will diffuse learning within the different community spaces and city platforms. These programs will open current schools and transform them into useful functional spaces of different disciplines, where each discipline will offer a learning facility within its platform and in relevance to its field of practice.
- The next step will include the construction and integration of technological means and tools within the city infrastructure across all platforms, which can provide accessible and equal opportunities for communication and experiences through digital and playful mediums.
- The child and his learning journey are the center of development and design, in which he will be included in every aspect concerning his scale and interests across the various environments,

### 18.6. The Impact of the ILC concept

The ILC concept will impact everything in our cities. The Architecture typology and space functions will transform to accommodate learning facilities. Our urban environments and spaces will integrate learning spaces within their platforms. The learning narrative will expand to integrate diverse exposures. The community members of all ages will communicate and interact for the purpose of learning. Local government, sectors, and stakeholders will collaborate to offer a variety of learning opportunities. Day-to-day activities and interactions will include learning possibilities. City infrastructure of transportation, streets, facilities, technological and communication networks, and safety measures will develop to host child-scale spaces, elements, and activities that will ease the way for his learning progress and holistic growth.



facilities, and spaces.

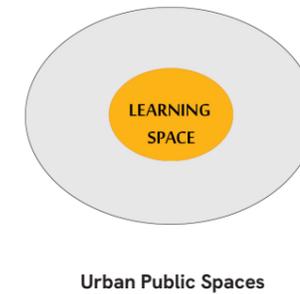
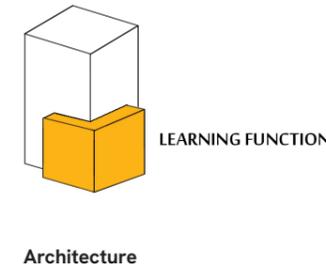
- Public Transportation facilities will also include children's scale seats and interactive instruments for learning, where a child can perform educational activities using entertainment and interaction throughout his daily learning experience journey.
- The financial obligation of implementing learning opportunities within private entities' platforms can be achieved by assigning a percentage of the taxes to implement such facilities and including the suitable and required interactive learning instruments and playful tools.

#### ILC LEARNING DISTRICT SPACES

- CORK LEARNING NEIGHBORHOOD FACILITIES (HEALTH CENTERS - LOCAL BUSINESSES - LOCAL SCHOOLS - ADULT & EARLY CHILDHOOD LEARNING CENTERS)
- BELFAST FESTIVAL OF LEARNING (INTERACTIVE LEARNING EVENTS - WORKSHOPS - ACTIVITIES)
- MEGAWRA - BEC LEARNING FACILITIES (HEADQUARTERS - HISTORIC COMMUNITY CENTER - CHILDREN PLAYSPACES IN AL-KHALIFA STREET - HISTORIC MUSEUM)
- CAMPUS RUTLI BERLIN (SPORTS CENTER - CONCERT & EXHIBITION SPACES - PEDAGOGICAL WORKSHOP - YOUTH WELFARE OFFICE - NETWORKING ACTIVITIES - PARENT CENTE)
- URBAN THINKSCAPE - BUS STOP (PLAYFUL PHYSICAL ACTIVITIES)
- THE MUSEUM OF SCIENCE AND INDUSTRIES (PLAYFUL LEARNING ACTIVITIES)
- ELON MUSK FACTORY - AD ASTRA SCHOOL (TESLA - SPACE X)

Fig.60. Case Studies Collective Narrative - Diagram Modified by the Author  
Base diagram source: (KidZania, n.d.)

#### BUILDING & SPACE TYPOLOGY



Stakeholders & Sectors Collaboration



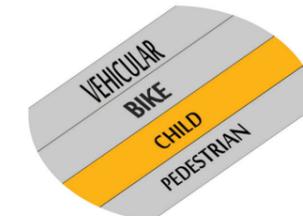
Intergenerational Learning Society



Transportation



Technology & Communication Networks



Streets



Elements & Facilities

#### INFRASTRUCTURE

Fig.61. ILC Narrative Impact Aspects - Diagram Created by the Author

**18.7. What other suggestions and recommendations? – “Further Steps”**

This paper acts as a call for action and an initial roadmap toward testing, developing, and implementing ILCs. It provides a built-up narrative through its chapters and sections for a more clear understanding of the different aspects of an Interactive Learning City (ILC). The constructed framework of guidelines and actions for an ILC is the first step towards this goal and will help to guide and motivate all global actors from the various sectors who aim at adopting the ILC approach and work on, analyzing, experimenting, developing, and implementing it. This paper acts as a base for further in-depth work for researchers, urban planners, governments, public officials, global organizations, psychologists, professionals of different disciplines, students, active participants of the community, and many other actors and stakeholders who believe in the importance of ILCs as catalysts for change and seek this concept as a main tool and a fundamental solution for the development of our cities into inclusive and resilient learning platforms that offers progress and prosperity for all.

This paper would recommend anyone who wants to pursue the ILC concept as a model for urban development planning and action to build on this narrative and take it further into a more detailed level of concrete and precise actions that can be tested, experimented and developed, so that we can obtain a holistic result that can help transform all cities across the world into Interactive Learning Cities (ILCs).

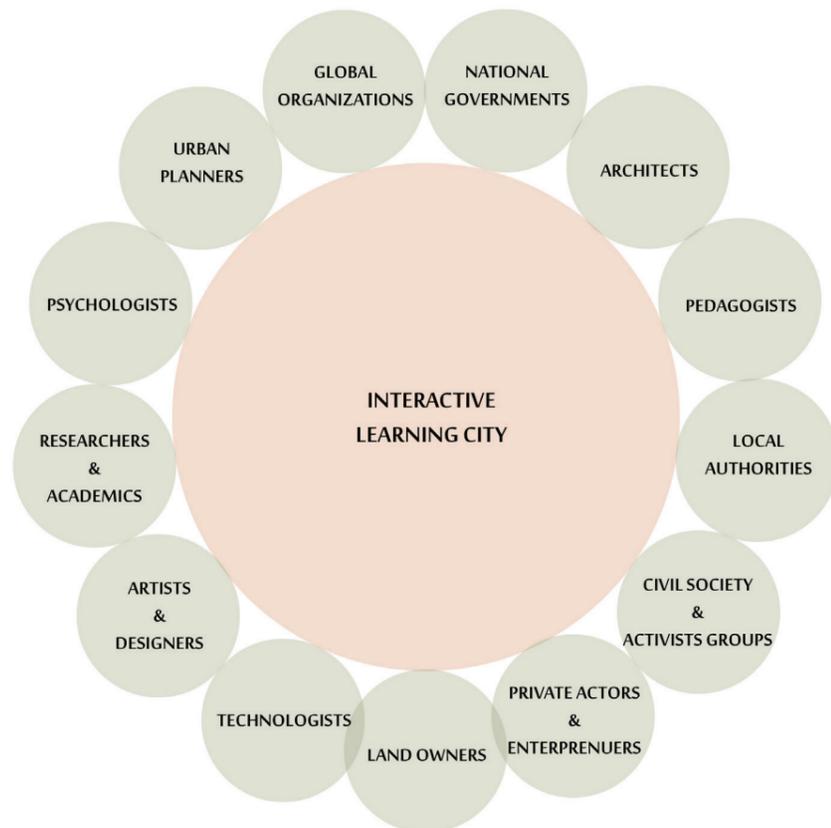


Fig.62. ILC Incorporated Sectors, Disciplines & Stakeholders for Further Steps - Diagram Created by the Author

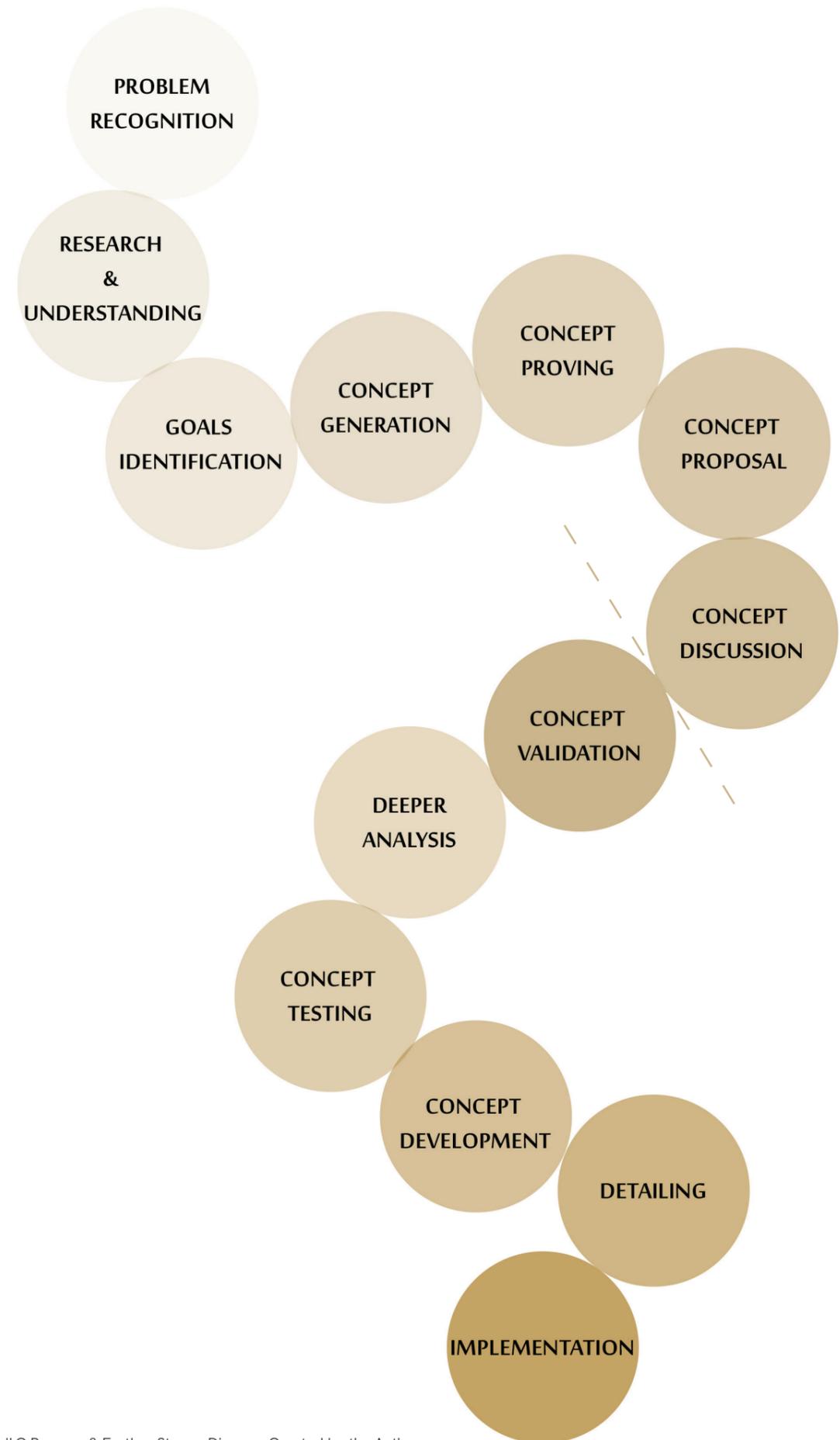


Fig.63. ILC Process & Further Steps - Diagram Created by the Author

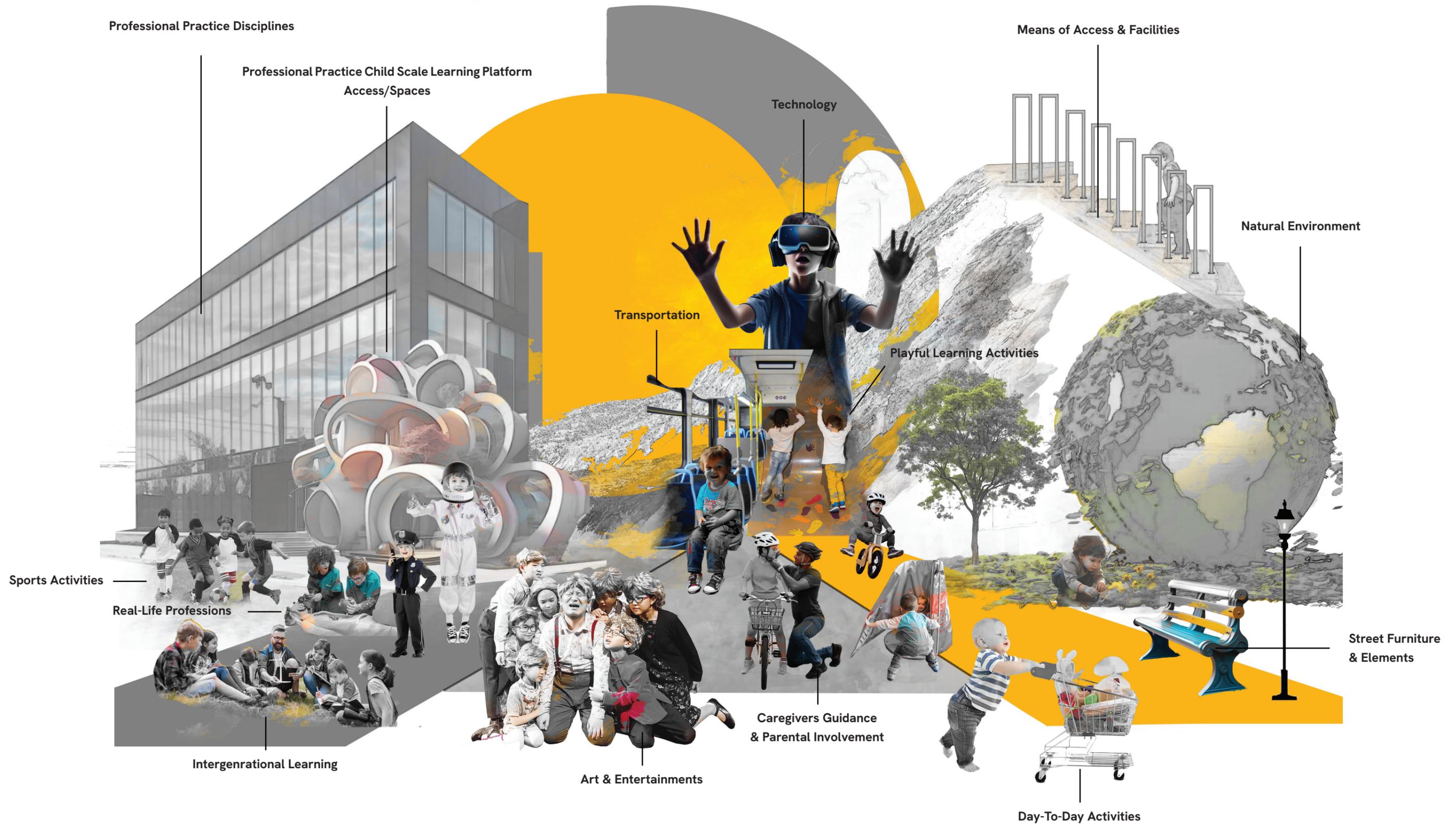


Fig.64. ILC Learning Neighborhood Concept Vision - Diagram Created by the Author

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